

ARCHIVES OF OTOTOLOGY.

A MODIFICATION OF KÖRNER'S PLASTIC IN OPERATIONS FOR CHOLESTEATOMA.

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(With three illustrations in the text.)

IF we examine a corrosion specimen or a topographical cross-section which passes through the skull in the plane of the auditory canal, including the skin, auricle, and bone, and is carried back and up into the mastoid antrum, then the posterior wall of the antrum projected on the side of the head and the auricle corresponds to the anterior wall of the antihelix, in fact to that part which, according to Schwalbe, can be called the point of bifurcation of the truncus helix. To produce a persistent intra-auricular opening which will freely expose the antrum, we must proceed, according to Körner, to prolong the section of the posterior wall of the auditory canal externally into the cyma conchæ. A section extending to the anterior margin of the auricle, the limen conchæ (Schwalbe), will give a broad communication between the canal and the antrum; but this has no especial advantage over the original method of Zaufal, where the intervening bony and membranous wall were removed. A persistent full exposure of the antrum cannot be thus obtained.

We have often encountered this inconvenience, even with Körner's plastic, as the non-resistant cartilaginous part of flap would again rise up on its base during the healing of the wound and approach its previous position, so that after healing the outer opening of the canal would resume its original

shape and hide the extreme upper part of the antrum like a screen. This result, as repeatedly shown by the experience of myself and others, may in certain conditions (putrefaction of epidermis scales, retention of mucous secretion in the cicatricial clefts of the hidden parts) be of unpleasant consequence to the patient, especially if beyond the reach of a competent physician.

For these reasons I have made a practice in recent years of resecting the cartilage of the soft parts which were employed as flaps in the plastic, in all operations for cholesteatoma. A large intra-auricular opening has thus been obtained which did not later contract, and answered every purpose, practically as well as cosmetically. Differing from Körner, I divide the posterior membranous canal with the probe-pointed knife with a single incision, running from within outward. At the prominent margin of the cartilage (the *limen conchæ*) the single incision bifurcates and a flap is formed out of the concha by the two diverging incisions, which are prolonged to the antihelix. The one passes back and up through the *crus helicis*, where it joins the ascending anterior limb of the helix. The lower incision has a more horizontal direction. The size of the angle at which the two latter incisions diverge depends on the size of the cholesteatoma cavity. The entire incision has a horizontal Y shape (see Fig. 1), forming through its three limbs an upper, outer, and lower flap. The outer flap contains the upper half of the cavity and the *cyma conchæ*, the upper and lower flaps correspond to the original posterior membranous canal and the neighboring part of the auricle.

The subsequent steps depend upon the size and position of the cholesteatoma cavity. If this is not very large, the skin is dissected from the cartilage of the outer (the *concha-cyma*) flap; the cartilage itself, with the thick fibrous mass at its medial end, is cut away, leaving a thin cutaneous flap, which is later to be applied against the post wall of the wound. If the cholesteatoma cavity is so large that its external wall is reduced to a thin, compact, bony plate, we cut away the cutaneous flap as well as the cartilage, and suture the auricle so that the skin of the antihelix is continuous

with the cholesteatoma matrix of the posterior wall of the wound.

Should the cavity extend unusually far backward, the antihelix and the entire auricle must be pushed back on the lateral side of the head. This is easily obtained by resecting a semilunar piece of skin along the posterior margin of the retro-auricular wound. The posterior attachment of the

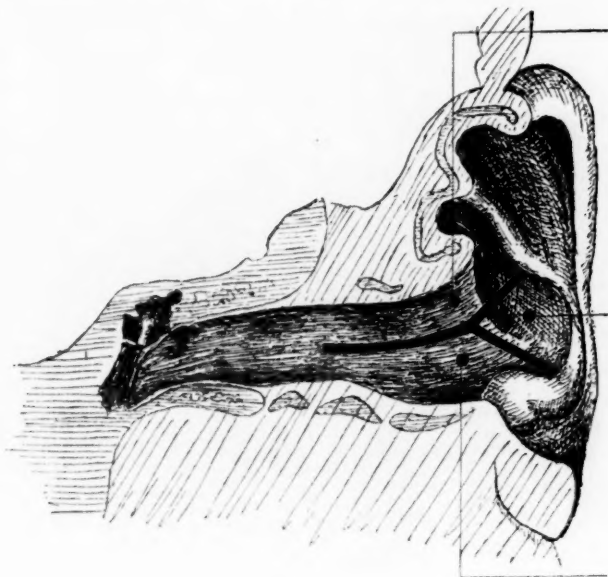


FIG. 1.

auricle is now set back and the auricle is more firmly applied to the side of the head. To obtain a good opposition of the wound margin after this resection of the skin, it may be necessary to enlarge the anterior wound margin by means of a suitable notch (Fig. 2). If the cartilage is abnormally resistant and thick, it is usually necessary to resect a portion in the upper and lower flaps of the canal at their tip and margins to make them more pliable.

Körner's restriction that his procedure is not suitable for cholesteatoma cavities and for narrow auditory canals, is done away with in my modification. To insure a wide outer opening it is important to remove well the outer two thirds of the ridge between canal and antrum, leaving only the

inner part adjoining the tympanic sulcus and facial canal. Moreover, before inserting the skin sutures, deep catgut sutures should be applied in the upper and lower angles of the wound, which approximate the divided deeper tissues and fix the flaps in their new position. By following this suggestion we have never had occasion to rely upon firm packing to keep aditus, antrum, and canal freely exposed;

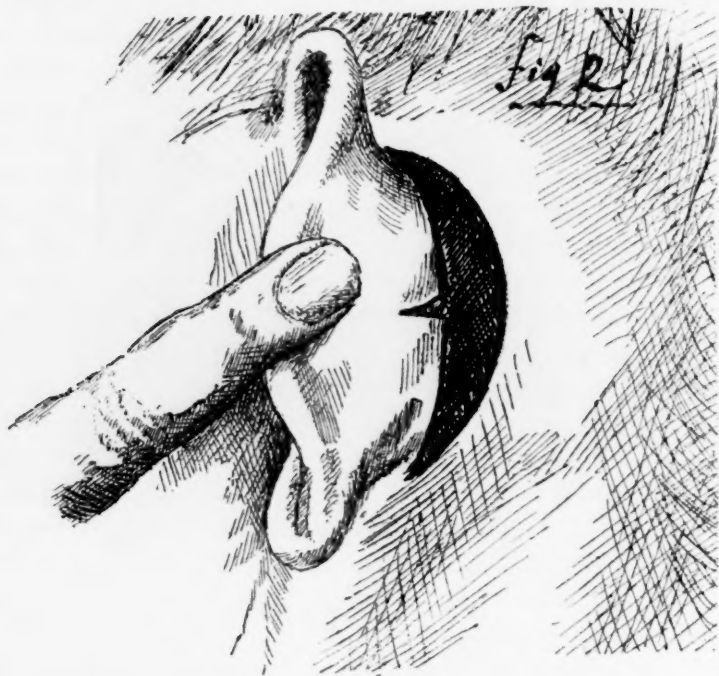


FIG. 2.

also in our retro-auricular method. For the skin we generally use sutures of aluminum-bronze wire. Further detail and the after-treatment of operation for cholesteatoma are described in a previous paper, published in the *Berliner Klin. Wochenschr.* (1891, Nos. 1 and 2). The process of healing when no transplantation has been done takes between four and ten weeks, according to the depth and extent of the cholesteatoma. The largest cavities usually require the shortest time, as I have previously discovered for the cholesteatoma with permanent retro-auricular openings, and

have described (*l. c.*). The external opening appears after healing as if enlarged to a square; its form and extent are visible in Fig. 3.

My reasons for abandoning the single long tongue-shaped flap are not new; it is much more convenient to be able to overlook the entire posterior wall of the cholesteatoma cavity after the operation, and not to run any risk of transplant-



FIG. 3.

ing flaps on already epidermized areas. If epidermization does not take place rapidly, the area can be curetted after two weeks and covered with grafts.

The establishment of a large opening, which really overlooks the antrum and permits ventilating, cleansing, and treatment without the aid of the specialist, can at present be considered the ideal operative treatment of cholesteatoma. Hence I have given this method the name of radical operation, which in an operation for *cholesteatoma* is surely justified. The phrase, "radical exposure of the middle-ear cavities," should not be applied to the Zaufal-Stacke opera-

tion if the large cells at the mastoid tip and in the tympanic floor are not opened.

As to the position of the large opening corresponding to the lateral antrum wall,—whether in the concha or behind,—it is not of great importance for the safety of the patient. From a cosmetic point of view, it is undecided whether the retro-auricular opening covered by the auricle and hair is really less favorable than a sufficiently large and freely exposed opening in the concha. I have obtained good results by either method. The importance of cosmetic reasons should not be exaggerated; it is better to operate so that the patient may later be as independent of the aural surgeon as he was previously.

OTITIS MEDIA NEONATORUM—A CONTRIBUTION TO THE EMBRYOLOGY OF THE MIDDLE EAR.

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THE old problem concerning the nature of the so-called otitis media neonatorum has lately been revived, and its solution on the basis of modern bacteriologic methods has been stimulated by the recent bacteriologic and clinical investigations of Netter, Gradenigo and Penzo, Haug, Rasch, Kossel, Hartmann, Walb, on the suppurative middle-ear inflammations of children, concerning which, heretofore, only pathological investigations obtained.

It has long been known that the middle ear of children frequently contained fluid of a suppurative character.

Is this fluid a physiological one, or is it caused by a suppurative inflammation? Unfortunately the recent bacteriologic investigations have not yet settled this matter. Whereas Gradenigo and Penzo refer the changes present in the middle ear of the new-born, in the majority of the cases, to the rapid putrefaction caused by the saprophytic organisms which they found in their cases, and not to actual inflammatory processes. Rasch says, "However absurd it may seem, otherwise rational men have declared it to be a fact that pus in the middle ear of small children is due to a physiological process," and further on says of their investigations that "they cannot succeed in giving the finishing stroke to the old Tröltsch-Wreden conception of the fre-

quency and significance of the aural inflammations of small children."

Recent authors (Hessler, Schmaltz) favor the view that pus in the tympanum of the new-born is an indication of a suppurative inflammation.

The well-known clinical investigations of Hartmann have placed the frequency of suppurative middle-ear catarrh in children upon so certain a basis that the inflammatory nature of the middle-ear contents in the new-born seem thereby established. The lively interest which these investigations, especially of Hartmann's, called forth is shown by the issue of an ordinance in 1895 by the government, which ordered a careful investigation of the ears of the children in the clinics, lying-in hospitals, etc.

The Pathological Institute of Göttingen was therefore asked by the board of managers of the Maternity Hospital of Hanover to note the condition of the ears of all the infants sent for autopsy.

According to my views the suppurative middle-ear catarrh of infants and children must be sharply separated from the otitis media neonatorum. The existence of the former has been proved above all others by Hartmann. Is there, then, an otitis media neonatorum?

To solve this question one must recognize three main considerations: 1. The bacteriologic findings of the middle-ear contents. 2. The microscopic conditions of the same. 3. The microscopic condition of the mucous membrane of the middle ear in every case.

As results similar to those of Gradenigo and Penzo were obtained, and on account of the length of time elapsing between death and autopsy, together with the shaking up of the cadavers due to transportation, bacteriological work was stopped. The bacteria of putrefaction were regularly found. I believe, however, that the microscopical examination furnishes a guide to the condition of the middle ear of the new-born.

The results of this investigation are tabulated; reference to which must be had in the original. The methods employed are briefly as follows: Both temporal bones were

removed with chisel and hammer, and thoroughly washed by a strong stream of water. The usual procedure of removing the top of the tympanum was soon given up because a survey of the cavity was not readily obtained. Opening with the chisel carries only too easily foreign material into the middle ear, and this must be most carefully avoided in order to make a positive diagnosis possible. The Eustachian tube was opened with a strong pair of scissors, along its upper wall, the incision being continued in a straight direction through the tegmen tympani till the pars squamosa was reached. Strong opposition is usually here first met with. For this reason, with a stronger pair of scissors, from the outside in an opposite direction, the rest of the pars squamosa and the outer wall of the tympanum are cut until both incisions meet, the tube and the ear cavity being now opened from above. When the outer wall of the tympanum has been cut sufficiently deeply, one can now, as Blumenstock did, unfold the anterior and outer wall, together with the drum membrane, from the inner and posterior wall, as one opens a bivalve shell, and survey the whole cavity, tube and antrum. A further cut along the inferior wall of the tube may be necessary. Usually only one of the temporal bones was opened, the fluid contents were aspirated by a fine pipette, spread upon a cover-glass, and examined in the fresh condition. Both bones were now placed in 10% formol-Müller solution, and placed in the incubator at 37°C for a few days. Decalcification in 2-3 days in a 10% nitric acid formol solution (10 parts of nitric acid to 100 parts of a 10% formol solution). This new nitric acid mixture, long employed by Beneke of Brunswick, gives excellent results.

A survey of the table to one familiar with the literature presents absolutely nothing new. It confirms what every careful observer during the last decade has observed and published. A review of all these investigations presents the following conclusions: That the middle ear of the new-born, in respect to the condition of its walls, the size of its cavity, and the composition of its contents, presents great variations, even as regards the ears of the same individual. Even

if the cases alone are taken into consideration where there can be no possibility of an infectious disease, as fresh still-births, or such cases as have lived only a few hours, we find the contents, barring air, to present all gradations, from a serous mucous fluid up to thick viscid pus.

The first exact microscopic investigations of the contents of the tympanum come from Koppen. He writes: "I may be allowed to conclude that during embryonal life, and in the first period of independent existence, the tympanum is always filled with a more or less thick fluid. As regards the character of the fluid, the upper layers consist of a grayish to yellowish sero-hemorrhagic fluid, whereas at the bottom of the fluid there is usually a tenacious thick mass, which in several cases contained cheesy particles. The upper layers of the fluid consist undoubtedly of serum expressed out of the blood. The deeper, thicker masses swell up in water, are precipitated by acetic acid as threads, and are considered to be mucous. Besides there is always present in abundance fat, pieces of mucous membrane, and the greatest variety of epithelium."

Tröltzsch reported at a meeting of the Würzburg Medical Society the finding of pus in the ears of the new-born, and in sucklings, and founded the theory of the inflammatory nature of otitis media neonatorum.

Since that report of Tröltzsch, the discussion on the subject has been a lively one. Schwartz, Wreden, Wendt, Hofmann, Kutscharianz, supported the theory of inflammation, whereas Brunner, Schmaltz, Politzer, v. Kolliker, with the aid of widely different experimental demonstrations, declared the process to be a physiological one. The latter investigations were especially concerned in the embryological development of the tympanum.

Since Tröltzsch's investigations, it has been known that the tympanum of the foetus is filled with a mucoid tissue, and that later the tympanic cavity is formed by the disappearance of this tissue. How and when it occurs is a mooted question. Tröltzsch speaks of shrinkage, of an increased desquamation, of a decay starting from the surface. Wre-

den of a resorption without decay or pus formation. Zau-
fal of a decay with formation of particles similar to pus, of a
synovial-like fluid.

Wendt considers it to be a retrogressive process, caused
by a quick and considerable diminution of the intracellular
fluid, induced by mechanical pressure during inspiration,
air, alone or with amniotic fluid, being aspirated into the tym-
panum. The actual transformation of the mucoid into
fibrous tissue occurs during the first days of extra-uterine
life. Wreden's and Wendt's views led to the establishment
of the ear test, as a medico-legal test, which, however, only
enjoyed a short life.

An actual tympanic cavity, in other words the disappear-
ance of the mucoid tissue, was held to prove the occurrence
of intra-uterine or post-partum energetic respiration, a view
which Eulenburg and Hofmann supported, with, however,
more or less reserve.

Moldenhauer held that the transformation of the mucoid
tissue into fibrous tissue began in the second half of preg-
nancy, but that there is no free tympanic cavity owing to the
close approximation of the hyperæmic mucous membrane.
The swollen condition of the mucous membrane suddenly
disappears with the onset of an anæmia, at the moment of
extra-uterine, rarely intra-partum, respiration; air and fluid
then enter the cavity. He himself was never able to detect
amniotic fluid.

Wendt's ear test received its first dangerous attack through
the investigations of Blumenstock. He found the tympanum
open in macerated fœtuses in whom intra-uterine aspiration
had not occurred, as shown by the absence of amniotic fluid.
Furthermore, in fœtuses which had respired energetically
after birth, amniotic fluid without air was found present; re-
sults which could hardly be brought in harmony with the
statements of Wendt and Wreden.

Kutscharianz went still farther, and declared that the
swollen cushions of mucous membrane of the tympanum
disappeared completely during the last months of fœtal life,
and that the tympanum of mature fœtuses was covered with
a thin and completely developed mucous membrane. The

cavity is filled with a clear fluid, and pus denotes a pathological condition.

Likewise Schmaltz found the incongruity of the thickness of the mucous membrane to the fact of respiration having occurred, but in opposition to Kutscharianz emphasizes the great variations in the development of the cushions of the mucous membrane at the end of pregnancy, absolutely independent of the occurrence of respiration. The constituents of the amnion in the ear does not signify necessarily that respiration has occurred. These can reach the tympanum simply through movements of deglutition.

Lesser, in a partial confirmation of Schmaltz's statements, arrives at the following conclusions:

I. The apniotic foetus—at seven months—has a tympanum filled with fluid.

II. Only after several hours of respiration does the fluid become mixed with air. The rapidity with which the air displaces the fluid does not stand in constant proportion to the duration of extra-uterine life.

III. Intra-uterine respiration causes no change in the composition of the contents of the tympanum. The apniotic and the asphyxiated new-born show constituents of the amnion in the middle ear.

Hnevkovsky gave the ear test its death-stroke. According to his researches, the disappearance of the swollen cushions of mucous membrane begins at the 5-7 month; a lumen is thus formed, which becomes filled with fluid derived from the mucous membrane, or with amniotic fluid. The latter is acquired either by aspiration or by movements of deglutition, or even after death by diffusion and capillarity. Consequently the demonstration of amnion proves nothing.

This completes, so far as I have been able to find, the pathological investigations that have been made.

Since the recent bacteriological and clinical investigations rather sustain the inflammatory theory, I will attempt, with the aid of my series of cases, to answer the following six questions already partly answered.

1. What is the character of the fluid in the tympanum of

the new-born, *i. e.*, of children either born dead or that have lived but a short time? A survey of the table shows the contents to be very variable. In accord with previous authors the following solid constituents were made out:

a. Polymorphonuclear leucocytes, pus cells, mostly with fatty degeneration more or less intense.

b. Larger and smaller round cells, with a simple round nucleus, usually replete with fat droplets, the so-called *Körnchenzellen*, partly of gigantic proportions.

c. Desquamated nucleated flat epithelium from the tympanum, mouth, or vaginal mucous membrane; also cylindrical and ciliated epithelium from the mucous membrane of the tympanum.

d. Vernix caseosa, in the form of clumps of non-nucleated, stratified epithelium and lanugo.

e. Meconium, characterized by its corpuscles.

f. Cholesterin crystals and pigment.

The so-called pus and pus flocculi were composed in greater part of leucocytes and *Fettkörnchenzellen*. As will be shown later, these are not to be considered as a result of a bacterial infection, but simply as a collection of leucocytes such as we are wont to see, for instance, in the crypts of the tonsils. The white flocculi were mostly composed of vernix caseosa. The meconium imparted the more or less marked yellowish-green color to the solid and fluid constituents.

According to the variations in the contents, for classification I have distinguished five groups:

1. The contents consist of air, or a clear muco-serous fluid, or of a mixture of air and fluid—thirty-nine cases in all.

2. It consists of a more or less cloudy thin fluid, with small yellow flocculi that are seen with the microscope to consist of collections of leucocytes. Sero-purulent contents were found in twelve cases.

3. The contents are more mucoid and tenacious in character, slightly cloudy, or beset with thicker yellowish flocculi, composed of leucocytes and *Körnchenzellen*. Such a muco-purulent fluid was present in thirteen cases.

4. More or less tenacious and large pus plugs were present in twenty cases.

5. Constituents of the amnion, vernix caseosa, and meconium were found in twenty-seven cases.

Omitting from the fourth group the cases of the children which had lived longer than twenty-four hours, there still remain nine cases with thick pus. Since a sharp separation between 1 and 4 does not obtain, the answer to the first question is as follows:

In the tympanic cavity of the new-born, so long as a complete displacement of the fluid by air has not taken place during extra-uterine life, fluid is found present, varying in appearance from clear liquid to a tenacious mucoid pus plug.

2. Is the finding of pus, *i. e.*, a collection of leucocytes, a physiological occurrence, or does it depend on special conditions?

A survey of my second table reveals the fact that the child being still-born, or dying shortly after birth, exercises no influence upon the character of the aural contents. A great variation as regards the length of life is especially noticeable in my cases with pus in the tympanum.

Another fact deserving of notice is that of the 33 cases with pus, in 19 of them distinct signs of the presence of amnion were demonstrated, but only twice in the 39 cases with an intact tympanum. This enables us to conclude that an infection with amniotic fluid, if I can so name it, induces the collection of leucocytes, for in those pus cases where constituents of the amnion are scanty, the latter may be easily overlooked.

As Schmaltz maintains that the amniotic constituents can penetrate into the tympanum by simple movements of deglutition, therefore these should be found in every fœtus. In order to proceed with certainty I have examined the fœtuses of earlier periods in respect to the contents of the tympanum. Nine fœtuses in all were examined, varying in length from 11 *cm* to 27 *cm*.

These investigations show that at an early period, namely, in the fourth month, when the cavity begins to develop, polymorphonucleated pus cells may appear. These are derived from the mucous membrane, as one may conclude from the result of its examination. The emigration of the leuco-

cytes into the cavity of the tympanum does not constantly occur. What are the causes of this emigration of leucocytes? The cushions of mucous membrane lining the tympanum, as is well known, decrease in size after the middle of pregnancy. We are unacquainted with the finer details of the process. It is plausible to suppose that the leucocytes participate in this retrogression, if they be found in every case. I have several times observed fine granular, fatty infiltration (*Verfettung*) of the tissue elements.

In Flemming preparations the large round cells imbedded in the meshes of the connective tissue are filled with fat droplets. The sustentacular cells proper remain free. The leucocytes which appear in the tissue are all of them overladen with fat droplets. No connection between the leucocytes and the large round cells. The leucocytes in the blood-vessels also contain fat droplets. Unable to come to a conclusion by this method, I believe that I have recognized the cause of the emigration of leucocytes in another and important fact.

As early as the fourth month in *fœtuses*, flat epithelial cells were found in the pus. These in part possessed large, oval, well stained nuclei, and were entirely similar to the flat epithelium of the tympanum, and buccal cavities.

Does a desquamation of the epithelium of the tympanum occur? For this I have found no support. The fact of its occurring in only a few tympani would be remarkable.

Epithelium from the buccal cavities it might well be. Many cells with shrunken nuclei, or rarely non-nucleated, are also present. I have not found shrinkage or loss of the nucleus in the buccal epithelium. The possibility alone remains that they come from the amnion.

Does the amnion contain at this period epithelium with nuclear remnant or only non-nucleated scales? Quite accidentally I had the opportunity to investigate the contents of an unopened amniotic sac of the 4-5 month. As in the tympanum there were found nucleated flat epithelium, such with shrunken nuclei and non-nucleated markedly fatty cells. Large masses, in layers, of the finest epithelial plates, as one finds in the vernix caseosa, were not present. Pigment was

also found. I consequently came to the conclusion, that as early as the fourth month of pregnancy, constituents of the amnion entered the tympanum—of course not in all cases.

Thrice the tympanum was found empty, twice a scanty collection of leucocytes, but no flat epithelium. As serial sections of the ears were unfortunately not made, the proof is here wanting. In the other four *fœtuses*, with a more marked collection of leucocytes, constituents of the amnion were demonstrated.

How does the amnion reach the tympanum of such *fœtuses*? I have as yet found no proof of intra-uterine respiratory movements at this period, and consequently admit the possibility that the movements of deglutition are capable of causing the passage of the fluid (Schmaltz). As mentioned, these do not lead to a contamination of the tympanum in all *fœtuses*. It is hard to furnish an explanation.

The occurrence of pus, even in the new-born seems sufficiently explained. I believe that with careful examinations in all cases when pus is found in the tympanum of the new-born, the constituents of the amnion will be found. Unfortunately my investigations of the *fœtuses* were made later, so that it was impossible subsequently by a close search of the tympanum to demonstrate their presence in all my cases.

It was a striking fact that in the cases with abundant pus, amnion constituents were frequently found. These must have been in abundance, and the finding of the adherent meshes of vernix caseosa is confirmatory evidence.

These latter particles could hardly have been brought into the tympanum through deglutition, since a stronger force would seem necessary. I shall presently revert to this. The presence of meconium in the pus masses is important in regard to the causation of the emigration of the leucocytes.

Apparently the larger hairy particles of the vernix and the meconium produce an especially intense irritation upon the mucous membrane, and the leucocytes in such cases are very abundant.

To conclude: pus formation in the tympanum is not a physiological one, that is, a necessary advent to the forma-

tion of a tympanic cavity, as it is not found in all cases. It is the consequence of a—frequently as early as the fourth month—contamination of the tympanum with the amniotic waters. When the larger masses of vernix and meconium are introduced, the pus formation is the most marked, which results in a complete filling of the cavity with pus.

An explanation is not easy to offer for those cases when, in spite of the presence of vernix and meconium, no suppuration is present. A certain length of time is required for the emigration to lead to the formation of pus. It remains absent, however, or is interrupted at an early period, when death follows shortly after the contamination of the tympanum. In mature still-born foetuses, born fresh, the contamination can have taken place shortly before birth.

3. Do the changes in the mucous membrane of the tympanum correspond with the varying character of its contents, especially such change which would aid in determining the bacterial nature of the suppurative inflammation?

In all my cases where no especial contents were found, no changes in the mucous membrane were present which would point to an inflammation. Here and there every tympanic mucous membrane contains a few leucocytes. The marked distension of the blood-vessels often present, and the hemorrhages, are the result of asphyxia. A reddened mucous membrane does not by any means signify that it is inflamed.

The infiltration of leucocytes is most marked where there is pus in the tympanum, and reaches sometimes a high degree.

The epithelium, however, is always preserved; at the most only injured by the asphyxial hemorrhages. The infiltration, however, is not to be compared in its extent with that obtaining in the bacterial otitis media of sucklings, as in two of my cases.

My conclusions are as follows: The mucous membrane of the tympanum shows in the new-born a cellular infiltration corresponding in degree with the intensity of the irritation which the smaller masses of vernix and meconium exert, but it never reaches such a degree as is seen in cases of bacterial otitis media. A perfect picture of a slight

inflammation is presented when the hyperæmia and the hemorrhages due to asphyxia complete the resemblance.

4. Can the presence of the grosser constituents of the amnion, vernix caseosa, and meconium be accounted for by aspiration processes?

I believe to have proved that isolated cells from the amnion reach the middle ear in the early months of foetal life.

What mechanical causes (movements of deglutition?) effect this transport must still be left unanswered. The question of how the larger particles of vernix caseosa and meconium enter is apparent. The facts presented at the conclusion of the second question, the finding of vernix, etc., without pus, in the fresh still-born, indicate that the respiratory movements which so frequently occur early are the causes of the aspiration into the tympanum.

The asphyxial hemorrhages into the mucous membrane of the tympanum prove how markedly the tympanum participates in the changes of pressure of the respiratory passages. A further proof is had in the simultaneous aspiration of the constituents of the amnion into the lungs of the same cases. The lungs must be thoroughly searched to obtain proof in every case of aspiration. The autopsies during the students' courses account for the large gaps in my statistics relative to this point. The frequent coincidence of aspiration into the tympanum and lungs is shown, however, by the exact critical summaries of Lesser.

The negative cases, in which children have breathed for a considerable period, are naturally barred, as here a subsequent cleansing of the lungs through attacks of coughing might have taken place. Nevertheless there remain twelve cases, in nine of which constituents of the amnion in the tympanum were found, and in eight of these nine cases likewise demonstrated in the lungs.

The frequent occurrence of pulmonary aspiration speaks against the view that the movements of deglutition, which occur in every child, cause the passage of the gross particles into the tympanum. Therefore, as the post-mortem entrance of such large quantities of amnion into the ear as we

found in a few cases is not to be considered, the answer to the fourth question is as follows:

The occurrence of the gross particles of the vernix and meconium in the tympanum of the new-born is due to intra-uterine respiratory movements.

5. Is the retrogressive change in the cushions of mucous membrane due to conditions of gross mechanical pressure and does this stage of retrogression warrant the conclusion as to whether intra- or extra-uterine respiration has occurred?

The investigation of the fœtuses and the findings in the new-born have furnished the proof, in confirmation of the results of earlier authors, that, independent of the entrance of amnion and air in the early months of pregnancy, the formation of an actual cavity begins with the separation of the epithelial covered walls of the cleft, the canalis tubo-tympanicus. The transformation of the mucoid tissue occurs gradually during the last months; in a few cases, after birth. The cavum tympani filled with a fluid, containing a varying amount of mucus and more or less large numbers of fatty leucocytes and Körnchenzellen. The significance of the latter and their origin from emigrated round cells or desquamated epithelial cells, remains in doubt. The presence of similar cells in the meshes of the tissue speaks for the former origin.

A marked desquamation of the epithelium of the mucous membrane, with preservation of their shape, does not occur. The lining of the tympanum is quite as variable in its earlier as in its later stages.

The determination of the extent and the presence of the thick cushions of mucous membrane consisted in most cases in an inspection of the tympanum and antrum, in the fresh condition.

The thickness of the cushions depends somewhat on the state of fulness of the blood-vessels. The determination thus refers only to such gross differences as are visible to the naked eye. In some immature fœtuses the mucoid tissue has undergone complete retrogression; whereas in others and in mature infants the process is still in progress. Hence the size of the cavum tympani is variable. An error is here

excluded which, according to Lesser, is possible when the method is employed of lifting off the tegmen tympani.

To conclude: the retrogression of the foetal mucoid tissue is intra-uterine, following laws of growth still unknown, and not in consequence of mechanical influences as Wreden, Wendt, and others infer, and the size of the cavum tympani does not allow a determination as to whether respiration has occurred before or after birth.

6. Has the character of the contents of the tympanum in the new-born a medico-legal value?

The answer is partly dependent on that of the fourth question. One would be led to believe that the finding of the gross particles, *i. e.*, vernix and meconium, would suggest intra-uterine respiration. It would naturally only hold for such cases in which drowning, after birth, in the amnion could be excluded. The finding of air in the middle ear of a fresh cadaver would be proof of respiration having occurred, either inside or outside of the respiratory passages.

Concerning the duration of life and of pulmonary respiration, all authors are agreed that the quantity of air in the tympanum gives no clue, as air can at times quickly, in other cases slowly, penetrate into the tympanum, and possibly may even be reabsorbed. The so frequent asphyxial hemorrhages deserve consideration. Both ears should always be investigated.

To return to the principal question, whether the finding of pus in the ear of the new-born depends on a bacterial process, the answer from an embryologic and pathologic standpoint must be a negative one, in accordance with the bacteriologic investigations of Gradenigo and Penzo. There is, therefore, no "otitis media neonatorum." The older statements of Zaufal, Schwartz, and Wendt, on intra-uterine inflammatory disease of the middle ear, with facial paralysis and perforation of the drum membrane, are no longer sound. Though the "pus" in the middle ear of the new-born cannot be accepted as the sign of an infectious otitis, the new proof for the old assertion is of value, that particles of the amnion and meconium can be found in the middle ear of the new-born in connection with intra-uterine respiratory move-

ments. I believe to have brought the further proof, that in the early months of foetal development, from the fourth month on, the amnion reaches the tympanum, but that the larger particles of vernix and meconium are introduced only by the respiratory movements occurring at the end of pregnancy, or at birth.

The contamination of the tympanum with amnion, whether it occurs early or late, is the cause of the collection of leucocytes in the cavum tympani. The so-called otitis media neonatorum is a suppuration due to foreign bodies.

The change which the mucous membrane suffers in this process, the filling up of the tympanum by nearly immovable masses, is certainly not immaterial for a disposition towards a bacterial disease, as Hartmann also emphasizes in a summary of the old Wendt reports. The proof must, however, be furnished by clinical, pathologic, and bacteriologic investigations of recognized cases of middle-ear inflammation in young children, with the frequent demonstration of the constituents of the amnion in the pus.

The severe hemorrhagic changes which the mucous membrane of the tympanum suffers in severe labors, with early respiratory movements, must be of some importance for a predisposition towards bacterial infection.

On account of some recent attempts to deny the occurrence of aseptic pus in the new-born, in conclusion, it must be once more emphasized that the finding of pus, a marked swelling and redness of the mucous membrane, with hemorrhages, in the new-born, and probably; also, in infants several days old, is absolutely no proof for an otitis of bacterial origin.

A REPORT OF SEVENTY-SEVEN RADICAL OPERATIONS.

BY DR. P. MANASSE AND DR. A. WINTERMANTEL.

FROM THE STRASSBURG UNIVERSITY EAR CLINIC.

Translated by Dr. ARNOLD H. KNAPP.

THIS is a report of the radical operations performed at our clinic during the last two years. It seemed to us of interest to add the experience gained therefrom, as the views on the indications for this operation are not the same, and because, as Passow states, with justice, at the present time a larger number of statistics are desirable to furnish proof on the line of after-treatment as we cannot decide the question of the shorter or longer course of treatment in the various methods.

As an introduction we wish to mention that unless a vital indication exists we have treated the chronic otorrhœas medicinally for a length of time, especially when the hearing was still relatively good. The acute cases were treated with the simple mastoid operation according to Schwartze. The radical method was reserved for the chronic cases, though it seems from Panzer's latest communications that subacute and even acute cases have been subjected to this procedure. A new method like the radical operation may thus be discredited by a too general application.

The best medicinal results in the chronic cases have been obtained by the regular employment of absolute alcohol, recommended by Politzer and others, to which corrosive sublimate, 1 to 1000, had been added. Ten to fifteen drops of this solution were dropped in the ear after thorough cleansing; the ear canal was then closed with cotton. Otor-

rhœas of years' standing, even combined with caries, were often healed in a short time, and in some cases the perforation even closed. Disagreeable effects, except pain on introduction, were not met with.

The indications for the radical operation may be stated as follows:

1. Intracranial complication, real or suspected.
2. Retro-auricular fistulæ and abscesses; gravitation abscesses of any variety.
3. Protrusion of the posterior and upper wall of canal.
4. Chronic otorrhœa, cholesteatoma of the middle-ear cavities, with or without caries, which resisted medicinal treatment for a length of time.

Our method of operating hardly differs from the usual. The operation is usually done according to Zaufal-Jansen's method; the Stacke method is only employed if the sinus is situated abnormally far forward. We generally use a hollow chisel about 15 *cm* long, with a flat curve and narrow handle; rarely the bone-forceps.

It was attempted in a few cases to retain the ossicles in place though our experience is too small to permit any judgment on this point. It would, however, not be out of place to continue this endeavor when the hearing is not greatly altered, and the attic and ossicles are not much involved.

The plastic was performed generally according to Jansen, in a few cases after Körner; recently in place of two flaps we have cut a flap out of the posterior wall in an upper or posterior direction according to the anatomical position.

The retro-auricular wound was always primarily closed with sutures when the soft tissues were healthy; in other cases, as in abscesses and fistulæ behind the ear, a part of the wound was left open. The wound was treated openly only when extensive caries of the labyrinth or intracranial complications were present.

The after-treatment of these operations is as important as the indication and technic. The first iodoform dressings remain in an afebrile case for six days; the sutures are then

removed and wound dressed with iodoform gauze through the ear canal. Three days later we commence with the moist dressings, and have found two-per-cent. solution of carbolic acid to be most serviceable. The wound is packed with sterile gauze dipped in this solution, a gauze compress moistened with the same solution is placed over the ear and covered with rubber tissue and a cambric bandage. This dressing is changed daily. Its application is especially to be recommended in purulent infiltration of the soft parts, in excessive discharge from the wound, and exaggerated formation of granulations. Unhealthy granulations, so usual with the dry dressings, did not appear with the moist dressings. Toward the end of the treatment we again return to dry gauze.

The age of our patients subjected to operation varied from two to fifty years. Thirty-six children below fifteen years were operated on. There were 46 males and 31 females.

Of these 77, 40 are healed, 21 still under treatment, and of 8 the final outcome cannot be stated. Healing occurred in the 40 cases in 713 weeks, an average of 17.8 weeks per case.

The functional result varied greatly, according to the destruction present. The function was made worse after the operation in only 1 case, no change in 6, improved in 17 cases. The improvement in hearing measured in the perception of whispered numbers varied from a few centimetres to fourteen metres.

The retro-auricular wound was closed primarily in 47 cases; primary union took place in 29 cases; secondary union in 18; the wound remained permanently open in 20 cases.

Perichondritis of the auricle was observed in 1 case. It was treated by incision and wet dressing, ran a protracted course, and healed finally with exfoliation of a part of the cartilage and considerable deformity of the auricle. New-formed drums, *i. e.*, membranes which closed off the tympanum from the remaining part of the wound, were observed in 5 cases. The formation of this membrane unquestionably interfered with the hearing.

Perisinuous abscesses were found in 2 cases; they occur

much more frequently in acute mastoiditis, as has been reported by others.

Fistulæ in the horizontal semicircular canal were encountered in 9 cases. The vertigo resulting from this complication usually disappeared on the healing of the wound.

An exostosis in the mastoid antrum was observed once. It was attached to the posterior wall with a broad base and protruded as a snow-white semi-round prominence.

Facial paralysis occurred 5 times after operation; it disappeared again in a certain length of time except in 1 case. Deaths occurred in a comparatively large number of cases after the operation; they were the result of the well-known complications.

A tabulated statement of these 77 cases, including length of treatment, functional results, and remarks, may be found in the German original, *Zeitschrift f. Ohrenheilkunde*, vol. xxxiv., pp. 16-23.

A NEW SYMPTOM OF OBSTRUCTIVE THROMBOSIS OF THE LATERAL SINUS.

BY DR. F. VOSS, RIGA.

Translated and Abridged by Dr. EDWIN M. COX, New York.

LEUTERT'S¹ schematic arrangement, aside from the fact that it ignores childhood, has the disadvantage of requiring "several days" to make the diagnosis of sinus thrombosis. Just how many days is not stated, but we gather from the text that three are required, and such delay may be dangerous. I have therefore looked for a symptom which may save this time and believe that I have found it. I use a stethoscope, on the principle that a normal unobstructed vessel, for instance, the internal jugular vein, gives a certain murmur which cannot occur if the vessel is obstructed. It is true, however, that this vascular murmur may be absent upon the normal side, but if such is the case we can cause an artificial murmur on that side. This is impossible in the case of an obstructed sinus. Investigation shows that the murmur is, ordinarily, uncertain in patients who are suffering from disease of the sinus, even upon the healthy side, possibly on account of the slowed blood current, when there is no sound on either side, or on account of the increased flow through the facial vein upon the diseased side, when there is no appreciable difference to be heard upon either side. If we place the stethoscope lightly upon the neck we hear the pulsations of the carotid, or if the heart is very strong we hear the sound made by the blood current in addition. If we gradually increase the pressure with the instrument, we hear the sound of the blood cur-

¹ *Arch. f. Ohrenheilk.*, Bd. xli., p. 215, 1896.

rent in the compressed jugular, and with further compression we hear sounds which with complete stopping of the blood current become like the first sound heard, the heart-beat in the carotid. Such strong pressure on a thrombosed vessel is dangerous and unnecessary. This continuous murmur in the jugular under the pressure of the stethoscope, if the vessel is normal, and its absence under other circumstances, is characteristic of sinus thrombosis. The best place to make the test is close to the base of the skull, and I have been able to demonstrate it a number of times at this spot. We use the stroke of the carotid as a guide, and must not press so hard that this is obliterated. It is also advisable to examine the patient both in the lying and standing positions, and we must allow the ear to become accustomed to the loud tracheal rales. Cases of this condition are not very common, but in two cases in children I was able to demonstrate the symptom on the right side and in each case the thrombus was found. Some further observations upon adults show that the symptom is regularly present. Absence of the murmur above and its presence in the middle of the neck may be explained by the condition of the facial vein. The instrument used was an ordinary stethoscope, and in my hands nothing was gained by the phonendoscope. In 1897 I was able to demonstrate this symptom in two children before the Society of Practising Physicians at Riga.

ACUTE BILATERAL BRAIN ABSCESS AFTER OPENING THE MASTOID—RECOVERY.

BY DR. H. SELIGMAN, FRANKFORT-A.-M.

Translated and Abridged by Dr. EDWIN M. COX, New York.

THE following is an account of an acute, evidently double brain abscess which followed the operation of opening the mastoid :

G. A., male, æt. twenty-two, had purulent otitis on left side from childhood. Membrana destroyed, and malleus absent, having been removed several years ago. Operation April 14, 1897. Periosteum adherent, bone dense. Antrum full of granulations and foul pus. The main point of caries appeared in the roof of the mastoid antrum, which was thin and had to be removed entirely. Tegmen tympani and wall of labyrinth healthy. Three days after operation, patient vomited, spoke imperfectly, and became comatose for a time. Soon after recovery from the coma he began to have severe headache. Temperature, 38.3 C., pulse 72, occasionally irregular. Next day, dressing dry, headache worse, pulse a little slower, and patient somnolent, and during the night severe vomiting. On fifth day, pulse 60, skin reflexes increased, and patient constipated. On sixth day there was a small amount of fetid pus discharged from the auditory canal. Temperature somewhat elevated, higher at night. On the seventh day the signs of brain compression were more marked. General strength good.

The above symptoms can be considered as due to brain irritation from infection in the neighboring temporal bone, carried through the opening in the tegmen antri, which has been mentioned, and through the labyrinth. By the prompt result of Weber's test in the positive sense (the tuning-fork

was lateralized to the affected ear), the labyrinth could be excluded as healthy; consequently the infection must have gone through the tegmen antri. The symptoms of brain irritation could have been caused, in the absence of pyæmic signs and cerebellar symptoms, either by abscess or meningitis. Lumbar puncture, however, brought no fluid, and we consequently made a diagnosis of cerebral abscess, most likely in the left temporo-sphenoidal lobe.

On the eighth day a second operation, under chloroform, was done. The cranium was opened with the mallet and chisel just above the meatus, in the squamous portion of the temporal, and the unpulsating dura was cut, revealing a normal and very dry pia. A needle was introduced into the brain, inwards and upwards, and at a depth of three *cm* drew pus. The cavity from which this came was opened along the needle, and its fetid contents washed out. After narcosis, pulse 72, temperature 37.4, and headache.

On the ninth day the headache was increasing, and on the following three days the condition gradually became a little worse, and the headache a little greater. No choked-disk.

On the thirteenth day were the first signs of paraphasia, and on the next day he was aphasic (amnesic). He answered questions, but could not name objects either on sight or from memory. There was hyperæsthesia in the legs. From these symptoms it was evident that there must be another abscess, probably near the first one, and on the fifteenth day an osteoplastic resection was done, after the aspirating needle had been used in various directions without result, but nothing was discovered. The patient was not improved by the operation, but he remained conscious. When he was moved he complained of pain in the gluteal regions, but there was no local tenderness. He was constipated, the aphasia continued, he had hiccoughs, and tremor developed in the left arm.

On the seventeenth day his temperature suddenly rose to 39.1, his pulse remained slow (64), and his constitutional symptoms increased.

On the eighteenth day his pulse rose to 100 and was weak, soft, and regular; in fact, tension had disappeared. I feared the rupture of an abscess into a ventricle, but the patient was not collapsed. The dressing contained an increased amount of pus of

the same fetid odor, and I therefore judged that a second abscess had opened into the first and was discharging through it.

The patient's general condition after this slowly improved and the discharge diminished. There still persisted an evening rise of temperature, and it was only on the twenty-first day that the muscular twitching ceased. On the thirty-sixth day the patient left his bed, but there was a discharge of pus for some time after this. The pain in the glutei seemed to have been due to abnormal reflex irritability, and was rather slow in disappearing.

ADDITIONAL CASES OF ACUTE OSTEOMYELITIS OF THE UPPER JAW IN INFANTS.¹

BY DR. RÖPKE, SOLINGEN.

Translated and Abridged by Dr. J. GUTTMAN.

IN his work on acute osteomyelitis of the upper jaw (*Festschrift des Archivs für Laryngologie*) Schmiegelow described in detail a case which had come under his own observation. He found two other cases recorded which he regards as acute osteomyelitis, although the reporters of the cases did not diagnose them as such.

One of these cases (recorded by Grandidier) occurred in a six-weeks-old infant, which, without any previous ailment, suddenly became sick with an acute inflammation of the right superior maxillary bone. The right cheek and nasal region were greatly swollen, the eye was œdematous, the hard palate on the right side was bulging, and after the dental buds fell out there was an escape of foul-smelling pus from the alveolus. Fourteen days later the child died. The autopsy revealed a total necrosis of the right superior maxilla. Grandidier ventured the opinion that the case was one of phosphorus necrosis.

The second case, reported by Rudaux, occurred in an infant three weeks old. The eyelids became red and œdematous; there was swelling of the infraorbital region, and then a quantity of pus escaped under the left eyelid, and later also from the left nostril.

In 1893 Schmiegelow himself treated a four-year-old child, which at the age of ten weeks, without any previous illness, suddenly became sick with fever, convulsions, and after a few days, great swelling of the entire right superior maxillary bone. According to the report of the attending physician this was followed

¹ Read before the Society of West German Rhinologists and Otologists, Nov. 7, 1897.

by a discharge of pus in the region of the canine tooth. Subsequent to a discharge of pus from the right nostril there was a marked abatement of all the symptoms, but the discharge of pus persisted, and from time to time smaller or larger sequestra were discharged. When Schmiegelow saw the child (four years after the onset of the disease), he found a periosteal swelling of the processus alveolaris and destruction of the lateral nasal wall.

Since then I found another case, published by Greidenberg in 1896, which I also consider as one of primary osteomyelitis. It occurred in a three-weeks-old infant, which suddenly became sick with fever, swelling under the left eye and of the alveolar process, and a discharge of pus from the left nostril. An abscess under the left eyelid was opened and the anterior wall of the superior maxilla and the processus alveolaris found to be necrotic. From time to time there were removed several sequestra.

I may record two other cases of this condition, which came under my care on the same day, January 15, 1897.

CASE I.—The male infant of a grinder, K., was well during the first week of its life, but in the beginning of the second week did not take the breast well and cried much. Then the parents noticed a swelling of the left cheek and a discharge of pus from the left nostril. The next day, observing a swelling also of the left eye, the parents called in their attending physician, who referred the case to me.

The child was brought to me on the fourteenth day of its age. The father asserted that he and his wife were always healthy; his three other children were never sick; the child preceding the patient was a still-birth.

The little patient is poorly nourished and has no eruptions on the body. The left cheek and the region about the left eye are very much reddened and swollen, and from the left nostril there is a flow of foul-smelling pus. The left half of the hard palate is bulging, and pus is discharging from several fistula. In the fossa canina there is a fistula from which granulations protrude. Probing of the fistula reveals extensive caries of the hard palate. The crown of the molar tooth lies loose in the granulations of the alveolar process. The probe encounters necrotic bone in every direction. The granulations are carefully removed with a sharp spoon, then the cavity is irrigated, and in the irrigating fluid are to be found several small sequestra. The cavity is tamponed

with iodoform gauze. The parents are instructed to clean the left nostril and the mouth every hour. Temperature 39.7° . The child is seen daily and tamponed.

On *January 18th.*—Temperature normal, the child can open the left eye, takes the breast better, and does not cry so much.

January 20th.—Disturbances of digestion sets in, great swelling of the infraorbital region; the discharge from the left nostril is more copious than it was previously. The irrigating fluid flows from the wound through the left nostril. The hard palate is less swollen, slight secretion from the small fistula.

January 21st.—The child is very restless; opening of an abscess in the infraorbital region. With the probe in the abscess cavity we can feel necrosis of the frontal process and of the lower orbital wall.

January 23d.—The crown of the canine tooth is in the irrigating fluid.

January 24th.—Much diarrhœa; no fever; discharge from the nostril ceased.

On the following days the child becomes steadily weaker, secretion from the fistula is comparatively slight.

January 31st.—Broncho-pneumonia.

February 1st.—Exitus in the morning.

CASE 2.—The child of a merchant, S., seven months old, strong boy, parents healthy, never sick till now, becomes sick with fever and marked swelling of the left upper jaw. The attending physician opens an abscess over the region of the left molar tooth, which lies adjacent to the abscess cavity. As the condition of the child does not improve, and whereas the swelling under the left eye increases so much that the child can no longer open its eye, another physician is called in, who suggests that I be called in consultation.

I found a swelling of the hard palate extending to the median line, and of the alveolar process on the left side; a small fistula in the canine fossa from which there was a flow of foul-smelling pus. The left nostril is also full of pus, the lateral nasal wall carious. The eyelids are œdematous in the left infraorbital region, and in the region of the zygomatic arch great swelling without fluctuation; temperature, 39.5° .

We decided to create an outlet for the free evacuation of pus from the canine fossa. I cut through the mucous membrane and the periosteum on both sides extending from the existing fistula

in the canine fossa ; scraped the periosteum upward. In doing this the scraper went through the anterior wall of the antrum into a large bony cavity. Digital examination disclosed destruction of the anterior wall of the upper maxilla and necrosis of the lower orbital wall ; a large sequestrum was separated from the processus jugalis and removed with the finger. Careful cleansing of the large wound cavity and tamponing with iodoform gauze.

The child was taken into the clinic. Temperature in the evening 38.5° . On the following days daily dressing, copious secretion from the wound cavity. There is no more flow of pus from the left nostril, the swelling of the hard palate and lower lid are less, and the child can again open its eye.

On January 25th the child is free from fever, is discharged from the clinic, and the mother is instructed to cleanse the wound cavity every day. The child is brought to the clinic once a week, when several sequestra are removed. The condition of the child is continuously good.

April 20th.—Child is brought the last time. There exists still a small fistula, the lower part of the cheek is somewhat sunken ; no swelling or sensitiveness to pressure anywhere.

On the first of May the parents moved away. The father informed me by mail that there still exists a fistula, and that small sequestra are now and then discharged. The child, according to the father's statement, is looking perfectly well, and there is no real disfigurement, notwithstanding the slight falling in of the left cheek.

There is hardly any doubt that in both cases we had to deal with an acute primary osteomyelitis. I naturally investigated the cases for the existence of lues, but careful examination of the parents and of the child gave no evidence of this ; the subsequent course of the disease also pointed to an acute osteomyelitis.

A careful perusal of the histories of the patients shows that all the six cases closely resemble each other. The disease occurs in infants who were previously healthy, became sick with fever, swelling of the upper maxilla, a discharge of pus on one or the other side, extensive necrosis, which is limited to the maxillary bone.

Regarding the treatment I agree with Schmiegelow that we should not proceed too radically. The result of the

conservative treatment is that we avoid bad disfigurement, even though the process continues for months or years. The younger the children the more unfavorable is the prognosis. The hard palate is also liable to be affected. The children then cannot drink, and their nutrition suffers. The pus is swallowed and causes digestive disturbances. It is therefore of the greatest importance in small children to cleanse the nose and the mouth carefully of the foul-smelling pus.

THE EFFECT OF ARTILLERY PRACTICE ON THE EARS.

By DR. RICHARD MÜLLER, BERLIN.

Translated and abridged by Dr. J. A. SPALDING, Portland, Me.

HAVING been interested in a case in which a workman suffered injury to his ears by long-continued rifle firing, I took an opportunity to be present at some artillery exercises, for the purpose of investigating the effect of repeated detonations of heavy guns upon the ears of officers and privates.

The firing on the first and second days was from 9-*cm* bronze field-pieces loaded with 1.6 *kg* of laminated smokeless powder, and with a very shrill, short, high-pitched report.

I did not get a chance to examine any soldiers exposed to the firing on the first day, but I occupied myself with investigations of a general character. On the second day I examined 21 privates who had been exposed to the concussions from 90 rounds. On the third day the 12-*cm* pieces, with 1.4 *kg* of smokeless laminated powder, and 70 rounds were fired, and in a second battery the 15-*cm* nickel-steel guns with a load of 4 *kg* of smokeless powder and 50 rounds. From these batteries 30 men were examined.

Although these pieces are not of the largest calibre, yet they are, so far as the report is concerned, not less powerful than the very heaviest mortars, as I was assured by the officer in charge. In point of fact, as I convinced myself from the centre of the battery, the noise from the six large guns fired like a salvo is indescribably tremendous, ear-splitting, and unique. The laminated smokeless powder

is three times as powerful as the old-fashioned granulated black powder, but since about the same weight of the new is used as of the old, one may get some idea of the force of the detonations.

It is one of the regulations of artillery practice that all privates *must wear cotton in the ears* during firing, whilst the officers are cautioned to close theirs with their hands. It would have been more advantageous for my investigations if the privates could have been directly exposed to the concussions of the guns, but the regulations are distinct against the least exposure of the ears, and for that reason rupture of the *Mt* is very rare.

During the first two days the men stood moderately close to the guns, but on the third day they concealed themselves behind a breastwork after loading and then fired the guns with a lanyard. This method was taken to avoid any premature explosion of shells, used only on this day. I was rather afraid that the diminution in sound produced by the distance of the men during this form of firing (3 to 5 metres) would negative my results, but nevertheless the concussions were still violent and the results on the ear about the same as in the men who stood close to the guns on previous days.

It was impossible amid so much confusion *to make any manometric tests of pressure in the ears*, but that the latter must have been well marked was proved by the fact that in one instance a plug of cerumen, which had given no trouble before the firing, immediately after produced a high degree of deafness from being propelled against the *Mt* by the force of the detonation.

The investigations that I made on 51 men, mostly privates, but including some subalterns and a few officers, consisted in examining the ears *before the firing*, placing the results in a book, and then making similar examinations *afterwards*. This step involved double examinations of the men, but was the only way in which to determine accurately the alterations due exclusively to the firing.

I tested in a room 8.60 m long, 3.55 m high, and 7.8 m wide:

1. The objective condition of the meatus and *Mt*;

2. The duration of the c fork (128 vibrations) from the vertex;

3. Aërial conduction for C_2 (G_2) as well as for a'' ;

4. The hearing for the whispered voice.

Although many points were necessarily left untouched, owing to the difference between testing patients in one's own office with all desired apparatus at hand, and in a place where men were constantly coming and going, and, although there was some haste owing to the need of not keeping the privates too long from their duties, yet I am quite sure that sufficient time for accurate observation was given for every man.

Out of 102 ears at my disposal 6 were occluded with cerumen before the firing so that a satisfactory examination of the *Mt* could not be made. Syringing would have taken too long, and, as the parts would have been so much altered so far as congestion was concerned that it would have been difficult to decide to which to ascribe the conditions after the firing (to the syringing or to the concussions), all manipulation was abandoned and the 6 were excluded.

Of the remaining 96 ears only 34 could be considered as normal before the firing; the remainder exhibiting slight alterations, such as abnormal position of the manubrium and retraction of the *Mt* generally slight, but occasionally marked. In others there was more or less dullness of color, absence of the light-spot, opacities, calcareous deposits, slight vascular injection, especially of the vessels of the hammer, and cicatrices. In no case was there any defect visible in the *Mt*, nor any middle-ear suppuration. Nine privates showed slight injection of the meatus with diffuse redness of its surface, and in two instances this congestion could be traced back to the *Mt*.

The appearances in the Mt were the same after the firing as before in 52 ears, but we must not forget that there might have been more changes if the cotton had been omitted. The remaining 44 ears showed distinct vascular congestion despite the cotton, a condition due to the firing alone, because these men were not exposed to any other external influence than the firing. All of these 44 showed increased

blood-supply, partly in the shape of diffuse and intense redness at the end of the meatus and periphery of the *Mt*, so that the boundary line between the two regions could not be distinguished, and partly in diffuse redness of the *Mt* alone. Other cases exhibited congestion of a single vessel on the manubrium with branches towards the meatus. Or without any connection with the hammer vessels minute capillaries could be seen in the margin of the *Mt*, running toward the umbo.

The intensity of the congestion varied, being moderate in two thirds of the cases, and extreme in the rest, but even when most marked the hyperæmia was never enough to cause the entire membrane to appear entirely red, for in every instance some normal color could be seen through the injected districts.

Extravasations of blood were seen in seven men, and always in ears which showed the most hyperæmia. The extravasations were always multiple, stippled, minute, occasionally in the upper segment, and once I saw a large bluish-red sugillation, the size of a bean, just below the umbo, and pushing forward the epidermic layer like a shiny blister. The case was noted before the firing as one of marked retraction of the *Mt*, but despite the extravasation, the hearing for even a whispered voice was good, there were no subjective complaints, nor was the man aware of any painful sensation at the time except that directly after one concussion he thought that he perceived a disagreeable sensation in the ear.

No case of *rupture of the Mt* occurred during the firing practice, which may have been due to the use of the cotton plug. Nor were there other objective appearances in the entire list, otherwise than before mentioned, except that in one man with slight retraction before the detonations there was observed afterward an appearance as if a portion of the *Mt* had been pressed like a disc against the promontory, presumably an old cicatrix.

It is worth observing, that ears found normal before the firing were almost always normal afterward. In only three of such cases could slight injection of the ossicles be

seen. Therefore we may assert that alterations seen after the firing occurred chiefly in ears that were not normal before. In other words, out of 62 ears abnormal before the firing, 41 showed increased abnormalities afterward. Ears with slight retraction before the firing and slight injection, were more hyperæmic after, which is probably due to the greater original tension of the retracted *Mt*. Consequently variations of pressure on the *Mt* from detonations produce more marked results on a membrane abnormally tightened than on one of normal tension, which can the more readily accommodate itself to varying degrees of pressure. The increased blood-supply is, as in cases of the skin reddened by rubbing, to be looked for as a local effect upon the parts affected. The process here is analogous to the vascular injection and extravasations seen after forcible massage of the *Mt*.¹

The duration of perception for the c fork from the vertex (normal ear 20 to 22 seconds) was abbreviated in 40 men, but Rinné's test was always positive. In 11 privates the duration of perception was as long as or longer after the firing than before. Possibly the fork was struck with greater force when these men were examined, or they paid greater attention, or greater quiet then prevailed, so that the difference may be accounted for in that way. The same sources of error may be suggested for several men who exhibited a shortened duration of perception afterward in comparison with that before. But after all is said to account for variations in the results of the tuning-fork examinations, there can be no doubt *that repeated violent detonations of artillery abbreviate the perception by bone conduction*, owing to over-irritation and subsequent exhaustion of the nervous portions of the ear.

The abbreviation of perception varied from one to sixteen seconds, but there was no proportional difference in the abbreviation between normal and abnormal ears. There were men with normal ears who showed excessive abbreviation of the duration of perception, and again men with marked retraction and hyperæmia who showed no abbreviation at

¹ Ostmann, *Archiv. f. Ohrenhklde.*, Band 44, p. 228.

all. So that it was impossible to prove that the amount of abbreviation depended in the least on the original objective appearances of the *Mt*.

The tests with the tuning-forks $C_2(G_2)$ and a'' by aerial conduction agreed identically with those obtained before the firing, so that we may conclude that the field for tones was not contracted by the detonations. I think, however, that this result is rather inaccurate, because it is remarkable that every soldier should have perceived the C_2 fork, and I feel that many soldiers without a musical ear confused the perception of the tone with the sensation of aerial vibration arising from the fork. Furthermore to test the upper registers with only the a'' fork does not enable us to assert positively that no contraction upward has occurred. I used at first a Galton whistle, but when some soldiers persisted in perceiving tones which I myself with normal hearing could not hear, I gave it up and employed the highest fork available, inefficient though it was for testing the highest registers.

Although I was unable to prove any diminution in the quality of the hearing after the firing, the tests for duration showed quantitative reduction in many instances. The smallness of the room in which the whispered voice was tested makes my results somewhat defective, for if I had had a space more quiet and more capacious there can be no doubt that a greater reduction of perception after the firing would have been discovered than was actually the case. Hence I do not lay much stress on the latter results. But I will say that 26 ears showed reduction for whispered voice, the maximum being about 4 *m*. Most of these ears had reduced perception before the firing began, and every one exhibited retraction of the *Mt*. Furthermore, the amount of retraction corresponded substantially with the hyperæmia observed after firing had ceased.

Very few complaints of tinnitus, vertigo, or headache were made after firing. Four men alone spoke of a roaring in the head, and one mentioned that he had often suffered from dizziness after practice, but on that day he had felt no sensations at all.

I was unable to tell how long the alterations noted in these examinations persisted, but judging from the fact that very few privates are invalided after two years of service, one can see that very little permanent injury follows ordinary artillery practice. In officers and some subalterns, however, who are exposed to such detonations year after year, permanent disturbances, such as partial deafness and tinnitus, are often observed. The treatment employed—baths, catheterization, sudorifics, pneumatic massage, cimicifugin, and neurosin (a compound of nitroglycerin and caffeine)—is generally of no avail except in occasionally reducing the tinnitus. Careful examination of all the officers and others permanently affected as a result of exposure to the detonations of heavy artillery revealed retraction and opacities in the *Mt*, *from which we draw the conclusion that violent detonations of heavy artillery on ears protected by cotton plugs only (or preferably) produce permanent injury to the hearing when the ear has been to some degree abnormal before the exposure.* This may be explained by assuming that the auditory nerve in an ear with retracted *Mt* remains permanently in a condition of increased tension or increased nerve-tonus, so that when exposed to violent concussions it is less capable of resistance than the less tense nerve of a healthy ear.

Moreover, when the *Mt* is constantly retracted the intralabyrinthine pressure is increased, and the nerve terminations thus permanently subjected to this increased tension are more powerfully affected by the pressure which follows detonations than when the permanent tension is normal.

Finally, we must not forget that the dampening action of the chain of ossicles in the normal ear is lost, or at least much reduced, during morbid processes in the middle ear, so that noise passes unsoftened and undampened to the labyrinthine structures.

From a practical point of view, we learn from these examinations that violent detonations of heavy artillery do greater and more permanent harm to ears with retracted *Mt* and middle-ear catarrh than to ears that are healthy. Without knowledge of this sort we might be inclined in cases for pension and damages to refer some slight affections of hearing

to visible alterations in the *Mt* and middle ear, and so to reject the claims of the injured person on the ground that the objective alterations were present before the injury occurred. But in my opinion we ought rather to see in these alterations an argument in support of the theory that it was the injury that produced the permanent deafness or even increased it, presuming of course that all the other symptoms coming into consideration coincide.¹

From a military point of view we learn that, aside from abnormal occurrences, permanent injury to ears that are not exactly normal is only likely to occur as the result of *prolonged and repeated exposure to the detonations of heavy artillery*. Therefore privates and others with but slight abnormalities in the ears, and in so far as they are not otherwise incapacitated for active service, can unhesitatingly be employed for two years' service in the heavy artillery, but, on the contrary, subalterns and young officers with ears at all diseased should be removed from such service, and workmen with similar slight alterations in the organs of hearing should be urged to avoid noisy trades or occupations.

¹ For further details on this subject see *Charité Annalen*, Bd. xxiii., p. 505
"Diagnosis of Traumatic Affections of the Inner Ear."

COMPLICATIONS FOLLOWING INTRANASAL OPERATIONS.

By DR. EDMUND WERTHEIM, Breslau.

Translated by Dr. MAX TOEPLITZ, New York.

THE dangers from intranasal operations are frequently exaggerated. They appear to be much greater than they really are, since the nose is freely accessible to aërial microbes which, when present, are difficult to reach, and since antiseptic remedies of sufficient concentration cannot be applied to the nasal mucous membrane. It is, therefore, not to be wondered at that nasal operations are frequently considered to be the cause of pyæmic affections. Statistics do not agree with this view, which is also in contradiction with our own experience, that infections following nasal operations are the exceptions. For their production, particular predisposing conditions must be present. If, in spite of the occurrence of facultative pyogenic and ordinary pus-producing micro-organisms in the nose, infection does not take place upon directly accessible wounds, protective arrangements must exist which arrest their development. This view is also confirmed by experiments, apart from clinical experience on the harmlessness of extensive lesions of the nasal epithelium.

Investigations made by Dr. Brieger, some time ago at our clinic, have demonstrated that the number of bacteria in the different portions of the nose vastly differs. The largest number of bacteria, of course, is found in the path of the inspiratory current. However, in accordance with the results of St. Clair Thompson and Piaget, more detailed experience, which is not entirely complete, has shown that

a certain auto-cleansing takes place within the nose, the number of bacteria capable of development being the smaller, the deeper the nasal portions are located from which they are taken. Former investigations prove the occurrence of numerous bacteria of different varieties in the nose, which partly exhibit full virulence in experiments upon animals. If they remain harmless, in spite of their opportunities to enter the body through open wounds, we are justified in concluding that the bacteria invading the nose experience a diminution of their virulence under normal conditions in contact with the mucous membrane, and that this is accomplished by protective arrangements.

This protection is so extensive as to completely compensate the loss of a portion of nasal mucous membrane, and excluded by operation, to prevent the development of the bacteria. This faculty is restrained to certain limits. If too extensive portions of the nose are simultaneously incapacitated, the defensive forces become insufficient and infection takes place. The protective agent has not, as yet, been found. Wurtz and Lermoyez have, on account of experiments, assigned to the nasal mucus a bactericidal force.

This hypothesis, which is also supported among others by Piaget, is generally not indisputably proven by the experiments communicated by the authors. If the nasal mucus, viz., the secretions produced by the goblet cells and serous glands, were really the cause of the bactericidal conditions in the nose, why is a much larger number of bacteria found in the most anterior portions of the nose than in the deeper portions? Just in the most anterior portions the micro-organisms of the nose are readily developed with the assistance of traumata, which pave the way for the invasion. It has been of late more and more recognized that the door for infections of different kinds—lupus, lepra, etc.—is here situated.

In ozæna, in which the discharge of fluid mucus, owing to the absence of the action of nasal glands, is essentially diminished, particularly favorable conditions for infection ought to prevail, provided the hypothesis of Wurtz and Lermoyez were correct. However, just here a particular re-

sistance against infection of another kind is present, due to the metaplasia of the epithelium.

The bactericidal qualities of nasal secretions, except in experiments with the anthrax bacillus, have not been positively proven. Analogous experiments with those of Wurtz and Lermoyez did not give constant results. The reaction of the nutrient medium may have been influenced by admixture of the nasal secretions.

The best proof of the intranasal anti-bacterial action being exclusively associated with the nasal discharge would be furnished, if the secretions would extranasally influence the development of their own intranasal microbes. Experiments, therefore, were made in the following manner: nasal secretions of healthy individuals, after disinfection of the vestibule, were directly blown upon agar plates, or upon agar placed obliquely into wide glasses. In all cases more or less numerous colonies of cocci and bacilli of various kinds developed. In a further series of experiments, mucus from positively normal noses was blown into especially prepared wide glasses with bouillon. In two cases only the nutrient fluid remained sterile. In all other cases, upon agar plates made from the bouillon kept in the thermostat mixed with the nasal secretions during different periods, numerous colonies of staphylococci, streptococci, diplococci, and different bacilli developed.

These experiments, which are not quite indisputable, tend to show that the nasal secretions do not possess permanent bactericidal qualities, which, while acting intranasally, do not act extranasally, and are dependent upon other agents, as yet not known, at any rate, of mechanical action.

Intranasal microbes may as readily escape from the nose as they enter it. The time for settling in the nose and for becoming infective may be too brief. This possibility is pointed out by Flügge, in his paper on "Aërial Infection," in discussing the causes of failure in experiments upon animals by inhalation of dry, scattered, phthisical sputa. In violent expirations, blowing the nose, sneezing, etc., numerous microbes are thrown out of the nose, which lessen the

number of the microbes originally present. The protective action of lymphocytes emigrating from the nasal mucous membrane may also play an important part in the diminution of the virulence of the microbes immigrating into the nose.

If the natural protective arrangement of the nose become insufficient, infection takes place, or rather not a genuine infection, but different morbid processes develop, according to the mode of propagation of the microbes, apart from differences which may be due to the heterogeneousness of the causative agents.

They may be:

(1) local, limited to the region of operation or its immediate surroundings, due to direct invasion of the microbes; or

(2) general, viz.:

(a) due to transmission in the lymph paths; angina.

(b) caused by propagation through the circulation; by emboli.

The main disease of the local processes, rhinitis fibrinosa, may develop from a specific infection due to Loeffler's bacillus. The following observation proves the fact, that diphtheria bacilli existing in the nose may further develop and produce the typical picture of rhinitis fibrinosa, even in cases in which a very small lesion of the epithelium was artificially made:

A child, three years old, is brought to the dispensary, on account of severe epistaxis. The bleeding spot of the nasal floor is cauterized. Owing to the restlessness of the child the cauterization became more diffuse than it was intended. After two days, pseudo-membranes presented themselves in the left (cauterized) nostril, from which pure cultures of Loeffler's bacillus were made. The course was extremely mild. Recovery took place after a few days under a spray of peroxide of hydrogen and powder treatment.

Even non-specific, simple pyogenic infections may produce general symptoms with local formation of pseudo-membranes, which may long persist under certain conditions. In this respect a case observed in our department was most

pronounced, in which, after galvano-cautery of the left lower turbinated body for twenty-two days, pseudo-membranes formed over and over again, and, in addition, during this entire period, fever up to 39° , occurred mostly in the morning, with irregular remissions.

These complications after endonasal operations are the exception, but in some individuals are the rule, so as to cause the belief in individual predisposition. In one and the same individual, *e. g.*, after the first cauterization, made *lege artis*, a severe angina, with serious general infection, occurred; after the second cauterization an otitis media, followed by empyema of the mastoid antrum, which had to be opened by chiselling; and also after the third cauterization, performed very carefully and limited to a small area, marked toxic general symptoms appeared, with moderate fever. This predisposition was due to local conditions, extreme nasal obstruction impeding the passage of the air current, whereby the invasion and development of the microbes were probably favored.

The accidental presence of an acute inflammatory process in the nose at the time of operation as a predisposing cause is illustrated by the following case:

In August, a patient, who had suffered from a cold, which had not been noticed and was not mentioned, was treated for epistaxis with the galvano-cautery. During the following night, chills, high fever, and general prostration set in, followed by acute inflammation of the mucous membrane of the entire nose, and also that of the antrum maxillare and frontale of the corresponding side, with typical clinical symptoms (and positive result of transillumination). Rapid spontaneous recovery under indifferent treatment took place. Headache and aprosexia persisted for some time, but completely disappeared during the patient's stay at the mountains.

The local disposition to infection is frequently increased by therapeutic measures, the most dangerous of which is nasal plugging. In several autopsies it was regularly ascertained that in every case of severe epistaxis blood usually enters the middle ear through the Eustachian tube, or the nasal acces-

sory cavities directly. Plugging favors the suppuration of these extravasations. It is well known that plugging may be followed by suppurations of the middle ear with subsequent empyema of the mastoid antrum. According to the hypothesis of Wurtz and Lermoyez, one could explain the injury done by plugging by the continuous imbibition of the bactericidal nasal mucus, instead of (as it is mostly done) by stagnation of the secretions, which is quite abundant after plugging.

Nasal irrigations, unsuitably carried out, may produce aural disease; the complications, however, in quite a considerable percentage of cases, are not due directly to the operative procedure, but to apparently accessory circumstances during the after-treatment.

Among the endonasal operations proper, the galvano-cautery is much more frequently associated with complications than cutting operations. By means of "distant action" the protective arrangement in the nose is more readily rendered insufficient. According to B. Fraenkel an angina following endonasal operation is not unfrequently propagated through the lymph channels. However, in some cases, palpation of the naso-pharynx has been the cause of the subsequent angina, and in others, an extensive reactive inflammation might have followed the endonasal operation, which produces interstices in the epithelium by the increase of emigrating leucocytes from the tonsil, thus furnishing an entrance for the microbes upon the surface of the tonsils. Against the latter view stands B. Fraenkel's doubt of the small etiological importance, for the development of infections, of these interstices in the epithelium, with their current of leucocytes directed outward. Fraenkel's hypothesis is supported by the comparative frequency of angina as sequel to operations, and by the rareness of complication in regions, the relations of which with the lymph channels of the nose are more exactly known, as, *e. g.*, in the meninges. Moreover, at other places of the lymphatic ring with the same opportunities for the entrance of microbes, such infections are just as rare as swellings of the deeper cervical glands which partly derive their supply from the nasal cavity.

The connection with the endonasal operation is left beyond doubt if it is immediately followed by embolic processes. Metastatic suppurations after nasal operations, as a rule, are genetically associated with sinus phlebitis, transmitting the embolic extension. Here, rather than in otitic pyæmia, embolic processes or metastatic suppurations, respectively, if the emboli carried away from the nasal blood channels were of an infectious character, may directly originate from the nasal blood cavities. This view is strengthened by the following observation, in which, after the removal of the posterior extremity of the turbinated body, hemorrhagic infarction of the kidney took place :

History : Patient, æt. twenty-four, who has never been sick before, suffers for years from nasal obstruction, and is sent by his family physician to the dispensary with the diagnosis of "nasal polypi."

Examination : Both nostrils entirely impassable for air. Left cavity is completely filled to the vestibule by a mucous polypus. Right cavity is not as completely filled, but just as impervious. The polypi originate from the middle turbinal and the lateral nasal wall. Rhinoscopia posterior presents enormous posterior extremities of the turbinals in polypoid degeneration.

Numerous polypi at first are removed from the nose with the cold snare. On the following day, July 18th, removal of the posterior extremities of both lower turbinals with the cold snare. On July 19th, extraction of several polypi. In the afternoon, temp. 38.2° , rising rapidly to 40.1° with a chill. July 20th, temp. 38.4° . The urine looks in the morning dark red and sanguineous. Microscopically numerous red blood corpuscles are found, kidney epithelia and hyaline casts are sparse, but many granular casts consisting of kidney epithelia and erythrocytes. Albumen confirmed by the test with acetic acid and ferro-cyankalium. Heller's test quite positive.

No suppuration in the nose. Spleen enlarged and palpable. Right kidney region sensitive on pressure July 22d. Amount of urine, 1500 *ccm.* Spec. gravity, 1015. No sugar ; color somewhat brighter ; intense dulness upon boiling. Much sediment. July 30th, no fever. Urine still contains small traces of albumen.

In this case, the typical renal infarction is directly due to endonasal operation. During the hemorrhage post opera-

tionem, a thrombus formed in one of the nasal veins, and when detached passed with the venous current through the facial veins to the internal jugular, anomya, and cava superior into the right heart chamber, and thence into the large circulation until it was caught in the kidney, and here caused the infarction. If this reasoning is true, the foramen ovale was supposed to be open, which does not unfrequently occur.

With some hesitation, however, another observation is reported, which is to be considered as an example of pulmonary infarction following an operation for nasal polypi, and is now briefly given with its most important details, as follows:

History: Patient, æt. forty-four, had a large number of nasal polypi removed on January 29th and 30th, with the cold snare at the dispensary. Hemorrhage. Plugging. On January 30th, towards evening patient was seized with chill, violent cough, and severe stinging pain at the side of the chest. On January 31st, he was admitted to the hospital. Examination: Temp. 38.7° ; pulse 96, regular and quite full; 24 respirations. Patient complains of headaches and stinging pain in the right side, which is increased with deep inspiration and cough, the latter being rough in attacks and dry. The sputum is quite profuse, moderately viscid, markedly hemorrhagic, and contains staphylococci and a few diplococci, but no typical Fraenkel's pneumococci nor Friedlaender's pneumobacilli. Lungs: Percussion R. backward and below, in a small circumscribed area slight dulness. Auscultation: Friction at the same place; isolated large rhonchi; voice fremitus not weakened; no bronchophonia. February 1st, fall of temperature in the morning to 37.3° , in the afternoon rising to 38.2° . February 2d, temperature falls in the forenoon to 36.4° . Daily maximum 37.4° . Subjective condition improved. February 3d, in the afternoon, sudden rise of temperature to 40.1° . Intense stinging pain in the side; cough; while the temperatures on February 4th and 5th are still above 40.0° , it falls on February 6th to 37.8° and then remains normal.

The diagnosis of pulmonary infarction is not absolutely free from objection. A pleuro-pneumonia could not be positively excluded. However, the slight result of the

physical examination, the coincidence with the operation, the sudden rise of temperature after it, and the condition of the sputum favor the diagnosis of an embolic pulmonary process. The second rise of temperature means another embolism. The thrombus had been carried from the nose to the vena cava superior, the right heart, and the lungs, where it stuck and produced a pulmonary infarction.

These thrombi of the cavernous cavities of the turbinals, which are frequently quite extensive, may pass the pulmonary arteries and thus enter the left heart and the large circulation. If infectious, they may, even without the connecting link of phlebitis of the cerebral sinus, directly produce the complex of symptoms of pyæmia.

The use of peroxide of hydrogen in epistaxis entails the danger of gas embolism by the entrance of gas bubbles into the open blood spaces.

The result of these observations is the absolute necessity of asepsis in nasal operations. Antiseptic operations are useless, since the microbes cannot be reached in the nooks and corners of the nose. Bactericidal drugs are not borne in proper concentration and quantity, and are transformed by the albuminous secretions into inefficacious combinations. It is, therefore, necessary to operate with aseptic hands and instruments, in order not to transfer infective agents from without, since the microbes existing in the nose remain innocuous under normal conditions owing to its protective arrangements. Cauterization of the middle turbinals should be avoided on account of endocranial complications, which have been most frequently observed just in these cases. Plugging should be done with antiseptic gauze sterilized by steam, which ought not to be left longer in the nose than twenty-four hours. In all cases, the direct treatment of the bleeding spot should be attempted, although plugging cannot be spared during the first hours.

After the cessation of the hemorrhage, the parts should be covered by antiseptic (iodol, iodoform), or indifferent, sterilizable (dermatol) powders.

REPORT OF THE MEETING OF THE AMERICAN
OTOLOGICAL SOCIETY AT NEW LONDON, CONN.,
JULY 18, 1899.

BY DR. H. O. REIK, BALTIMORE.

The meeting was called to order by the Secretary, Dr. F. L. Jack, who announced the inability of the President Dr. Arthur Mathewson, to attend, and the Society elected Dr. J. Orne Green to serve as temporary Chairman.

I.—DR. CLARENCE J. BLAKE, Boston. **Further observations on blood clot in mastoid operations.**

Dr. Blake reported the histories of 33 cases of mastoid disease, taking them consecutively as they entered the hospital, operated upon by the blood-clot method. These included both acute and chronic cases; and in every case after thoroughly cleaning out the diseased tissues the mastoid wound was stitched tightly in hope of securing union by first intention. The results were very satisfactory. Eight cases healed by primary union, in twelve the blood clot partially broke down, and in seven it was wholly broken down. In the cases of partial success the period of healing was very much shortened, however, because the clot breaking at the bottom secured good drainage, followed by granulation, while the upper and larger portion of the clot remained intact. Experimentation has shown the presence of osteoblasts within 48 hours, and in no instance did the clot show evidence of giving away in less than that time.

Discussion.—Dr. BACON said that he had seen Dr. Blake's cases and considered them most satisfactory. He had tried the method with success in acute cases and in view of Dr. Blake's experience would now attempt it in the chronic cases.

Dr. J. ORNE GREEN asked what had been the average time of healing in the acute cases. He thought Dr. Blake's results most

favorable but had been somewhat afraid of the method lest in some rare case some diseased tissue should be fastened up in the wound to give rise to more trouble. Dr. Blake replied that he knew this seemed somewhat against general surgical principles but it did not increase the danger, because the wound was one that could be readily opened, cleaned out and allowed to granulate, if the clot were not a success. The advantages of the method were the comfort of the patient, in avoiding dressings, and a great shortening of time required to secure healing. The average period in acute cases was nine days, but during the last two years eight or ten cases have been seen in which complete union took place within five days.

II.—Dr. B. A. RANDALL, Philadelphia. **The Stacke operation ; simple exenteration of the tympanic cavities.**

Dr. Randall reiterated his dissatisfaction with mere excision of the ossicles, as rarely succeeding in curing tympanic suppurations which could not have been cured without it. Even the 50% claimed as cured by its advocates is considered a huge over-statement of its value, while personally he had never secured a single success. Tympanic exenteration must be thorough, with removal of the scutum, so as to throw into one the attic, atrium, and antrum, with the deeper part of the external canal, and this is generally best done after Stacke's original method without opening the mastoid cortex. Laying the soft parts forward and chiselling into the back wall of the canal, he enters the aditus and enlarges the opening with safety by keeping a bridge of the bony annulus intact over the facial canal and stapes, then breaks away this thin bridge by an outward sweep of the spoon, and is able to freely remove all pathological tissues in every direction. Only when diseased is the outer mastoid table touched.

In replacing the soft parts, the back wall of the canal is split into a cutaneous and a periosteal layer, with excision of all cartilaginous tissue, giving better flaps of double extent for covering the bone surfaces. Gauze drainage strips through the canal hold these flaps in place, and the mastoid wound is sutured for primary union. Healing in four to eight weeks is secured in eight out of ten cases—the failures being generally due to dyscrasia.

Discussion.—Dr. GREEN said that Dr. Randall's idea of securing the two flaps in that way was very ingenious and asked if he had had any trouble in applying them because of their delicacy.

Dr. RANDALL said he had not.

Dr. SPRAGUE said that the method of operating in Schwartz's clinic was very similar to that described by Dr. Randall, though the flap suggested was entirely new to him.

Dr. BACON asked if Dr. Randall closed the posterior wound, and Dr. Randall replied that he closed it tightly, using the Halsted subcutaneous silver stitch.

III.—Dr. E. B. DENCH, New York. (Read by Title.) **The Stacke operation in chronic otorrhœa.**

The method of operation advocated by Dr. Dench is that known as the Schwartz-Stacke: first entering the antrum in the usual way, then deflecting the cartilaginous lining of the external auditory canal, and cleaning out the middle ear, he removes the wall of bone separating the antrum from the canal. Quadri-lateral flaps are then made by crossed incisions of the posterior cartilaginous canal wall, and these are held in place by gauze dressings. The mastoid wound is closed tightly. Of 17 cases operated upon by this method, 13 were entirely cured and 4 improved.

IV.—Dr. J. F. MCKERNON, New York. **Sigmoid sinus thrombosis. Seven cases. The first non-infective: recovery. Six infective: five recoveries; one fatal. With remarks upon symptomatology and treatment.**

Dr. McKernon reports in detail the histories of these cases with the results as stated above. Concerning symptomatology he says we should consider:

Otorrhœa.—The presence or history of a discharge from the auditory canal of the affected side.

Chills.—They are present in a large proportion of cases, and of the symptoms to be depended upon in aiding us to make a positive diagnosis of sinus thrombosis, the presence or history of a chill, followed by a sudden rise in the temperature, with a remission and profuse sweating, is, if present, one of our most positive signs. Even chilly sensations should put us on guard.

Temperature.—This depends on the amount of septic material entering the general circulation, which, if it be large, is immediately followed by a rise from normal to a high point, and is followed by remission. If the amount be small, the rise in temperature will be gradual, and not necessarily high.

Pulse.—When there is a sudden and high elevation of temperature there is corresponding rapidity of the pulse-rate, and it will usually be rapid even though the temperature is low.

Pain.—In most cases of thrombosis the degree of pain is greater than that present when only an ordinary mastoiditis exists.

Nausea and Vomiting.—These symptoms are nearly always present in some degree.

Consciousness.—There was a lack of normal cerebation in all cases.

Constipation.—This usually coexists with the early stages of the disease.

Concerning treatment, Dr. McKernon advocates a thorough exposure of the sinus, thoroughly cleansing the field, tapping with the hypodermic needle, and, if still in doubt, opening the sinus. Should a clot be found it is of course to be removed.

V.—Dr. CHAS. W. RICHARDSON, Washington. **Septic thrombosis of the sigmoid sinus.**

Dr. Richardson reports a case occurring in a man sixty years of age who had been sick for several weeks with "chills and fever." The right ear had been the seat of suppuration for many years. There was almost constant headache localized over the parietal region, tenderness over the mastoid, vertigo, constipation, dry foul tongue, sallow skin, and intermittent pulse. The temperature was rarely above 101°.

At the operation the sinus was exposed throughout its whole length, and the walls were found to be gangrenous. The vessel was filled with a nasty broken-down clot. The patient died twenty-six hours after the operation from the intense sepsis.

Discussion.—Dr. RANDALL advocated the reporting of such cases in the general medical journals and not solely in the otological journals. By this means physicians may become more familiar with the early symptoms of such cases and thus improve the patient's chances by operation.

Dr. BACON suggested caution in the use of the hypodermic syringe, as he had seen several cases where one could withdraw fluid blood and yet there was a soft thrombus present.

Dr. RANDALL spoke of the method recommended strongly by Dr. Whiting, of stroking the sinus and jugular vein to determine the presence of blood clot.

Dr. MCKERNON said that he had felt afraid to do this lest he should disseminate some portion of a septic clot.

Dr. RICHARDSON and Dr. MCKERNON both laid stress upon the necessity for opening the sinus with the knife, in spite of negative evidence by the needle, in cases of doubt as to the presence of a thrombus.

VI.—Dr. C. H. BURNETT, Philadelphia. **Pneumo-massage of the external auditory canal compared with inflation of the tympanum.** (Read by title.)

Dr. Burnett's conclusions are as follows: Pneumo-massage applied to the external auditory canal and membrana tympani, in both acute and chronic catarrhal processes in the middle ear, is more efficient, less of a shock to the auditory nerve, more agreeable to the patient, than inflation, and entirely free from sepsis, whereas inflation is not. Inflation of the tympana being very rarely necessary as a means of forcing air into the middle ears, the latter being very seldom in need of it, it is fair to conclude that inflation, as it must be applied to both ears whether desired or not, is usually *contra-indicated* in aural diseases. On the other hand, as drawing the membrana tympani and malleus outward and traction on the tensor tympani and restoration of the normal isolation of the auditory ossicles are desired, without ~~any~~ shock to the structures upon the inner wall of the drum cavity, and as this can be so safely effected by pneumatic rarefaction of the air in the auditory canal, pneumo-massage is indicated for this purpose. In fact, some form of pneumo-massage of the external ear has almost entirely superseded the use of all forms of inflation of the tympanum in my hands during the past ten years.

VII.—Dr. W. B. JOHNSON, Paterson. **Report of a case of otitic neuritis.**

Dr. Johnson points out that if optic neuritis can occur as a sequela of la grippe, otitic neuritis may occur as the result of the same conditions, whether the disease be the result of toxic poisoning, inflammation, hemorrhage, or some organic change caused by the presence of micro-organisms, or from some disturbance of the vaso-motor centres affecting the circulation. A case of otitic neuritis is reported in detail, in which during an attack of la grippe the patient became intensely deaf in both ears, was dizzy, troubled by noises in the ears, and in the early stages nausea and vomiting. The symptoms improved rapidly under the administration of supra-renal capsule, but after a lapse of three months the patient still remains absolutely deaf.

Adjournment.

AFTERNOON SESSION.

The officers elected for next year were as follows: President, Dr. H. G. Miller; Vice-President, Dr. B. A. Randall; Secretary and Treasurer, Dr. F. L. Jack.

VIII.—Dr. F. B. SPRAGUE, Providence. **A case of adenocarcinoma involving the cartilaginous meatus and the squamous and mastoid portions of the temporal bone.**

The patient, a female, age sixty-two, in good health up to four years ago, when she had a non-malignant tumor removed from the breast. The ear trouble began with a feeling of fullness, attended by periodical attacks of severe headache starting from the ear and spreading over the head and right side of the face. Examination of the ear showed a smooth, hard mass projecting downwards from the superior wall of the meatus and a second smaller one projecting upwards from the floor. Both were hard and unyielding. No tenderness about the ear, except at long intervals, when the whole condition seemed aggravated. Operation was refused for more than a year, the patient suffering a great deal, and the disease extending until, when operated upon, it was found to involve the temporal bone and the parotid gland. One year has elapsed since the operation, and the patient's condition is again becoming bad. There is facial paralysis, ptosis, diplopia, and mental failure.

Discussion.—Dr. GREEN asked if there was any reason to suppose that this tumor originated in the parotid gland.

Dr. SPRAGUE replied that there was not, and that in the early stage it seemed to be localized in the meatus.

IX.—Dr. J. ORNE GREEN, Boston. **Personal experience in tympano-mastoid exenteration.**

Dr. Green said that he believed this to be a most valuable operation for the cure of chronic suppurations deeply seated in the temporal bone, but at the same time considered it one of the most complicated operations the surgeon met with, for its success depends upon attention to the most minute details, not only in operation, but in after-treatment. He had performed the operation in some twenty-five cases, with success in all but one, both in curing the otorrhœa and in securing complete epidermization of the cavity. He considered the greatest danger in the operation to be that of injury to the facial nerve, but said that, while it had occurred with five or six of his cases, it had proven to be of a temporary nature in all but one, and in that instance he had, at the operation, found a carious opening into the Fallopian canal.

The technical difficulties he had found to be, first, thorough cleansing of the cavity after exenteration; second, getting the external surface of exposed bone covered; third, keeping down

exuberant granulation tissue; fourth, producing epidermization of the cavity.

He advises all patients to have the ear inspected once in every six or eight months, in order to remove any collections of desquamated epithelium, and thus protect against further trouble.

X.—Dr. J. O. TANSLEY, New York. **Shall we use cold in acute middle-ear or mastoid affections? if so, how long?**

Dr. Tansley referred to the old practice of twenty-five years ago, of treating acute processes of the middle ear with dry or moist heat, according as there was not or was a secretion present, and all mastoid inflammations by hot poultices. He referred to the fact that in acute inflammations of the eye, very few considered the use of cold as of any benefit in diseases more deeply seated than those of the iris or ciliary body. He believed that cold would restrain microbes if used beyond a certain degree, but thought the question was, whether we were able to obtain such a degree of cold in the ear or mastoid as could produce such a restraining influence. He thought not. He had used it a number of times in the past twenty-five years, but had concluded that in those cases which got well with it, they would have done the same without it, and in those cases which subsequently required operation it had failed to exert any curative effect whatever. He reported the history of a case to show that it might even cause greater destruction of tissue, and as it seems to accomplish nothing more than a slight restraint upon the pain and external swelling, and as it sometimes hinders in determining when to operate, he desired to go on record as being opposed to the use of cold in these cases, in any manner and for any length of time.

Discussion.—Dr. JOHNSON said that he was an advocate of hot applications, either dry or moist, in mastoid disease, and thought they were more beneficial than cold ones. He believes that if infection was present and had extended to the cells, it was very probable that neither hot nor cold would do much to check the process.

Dr. RANDALL also advocated the use of heat as being safer, more comfortable to the patient, and a more rational treatment than is afforded by cold.

Dr. BLAKE presented a resolution asking for the co-operation of the American Otological Society with a committee of the National Association of Teachers of the Deaf and Dumb, to secure systematic examination of the pupils in deaf-mute schools.

He explained the necessity of thorough examinations, in order to select those pupils who could be most benefited by special teaching, and who, perhaps, by some treatment, could be made better able to accept teaching.

The resolution was adopted, and Dr. BLAKE was appointed chairman of the committee with power to choose his colleagues.

Adjournment.

REPORT OF THE MEETING OF THE NEW YORK
OTOLOGICAL SOCIETY OF MAY 23, 1899.

BY DR. H. A. ALDERTON, SECRETARY.

President, Dr. C. J. KIPP, in the chair.

Dr. MCKERNON presented a case of **scarlatinous otitis, with streptococci, mastoiditis, and facial paralysis**. Operation. The pus in the mastoid process contained streptococci. Epidural abscess. The sinus was opened and found to contain a clot surrounded by muco-pus with streptococci. Hemorrhage was induced from above ; from below pus was evacuated. The internal jugular was exposed, tied, and resected, together with a portion of the facial. Aspirated the cerebellum negatively. Uninterrupted recovery. Metastatic abscess three weeks after the operation. The patient has been rather blue since the operation and the pulse-rate rather high. There is still some slight facial disturbance.

Discussion.—Dr. EMERSON: The discharge has been spoken of as being very black at first ; might this not have been due to the blood from the polyp ?

Dr. MCKERNON thought not ; it seemed to come black directly from the mastoid.

Dr. EMERSON thought he had seen such cases in which removal of granulation tissue caused the disappearance of the black color.

Dr. MCKERNON asked advice as to a case of a **gouty or rheumatic woman**, fifty-three years old, who a number of months previously awoke with a **blowing noise in the ear**. *Mt* retracted and pale ; tube somewhat stenosed. Inflation gave only temporary relief for about half an hour ; the bougie did not do any better. He would like to know the nature of the trouble and what would benefit it.

Dr. BUCK thought that there was probably something at fault either in the naso-pharynx or in the inferior turbinates.

Dr. MCKERNON : Simply slightly atrophic.

Dr. SHEPPARD asked as to whether the patient was not anæmic.

Dr. MCKERNON : Somewhat at first, but now better ; also some digestive trouble.

Dr. BERENS : Was the circulation examined ?

Dr. MCKERNON : No.

Dr. WILSON reported a case which he had first seen in 1897, a young man, twenty years old, in whose right ear, **at the junction of the *Mt* with the upper wall of the canal, existed an oval projection**, seemingly a morbid growth. The patient was seen again two months ago ; the growth had extended along the upper wall of the canal about three-fourths of an inch and a sac, projected down from it into the canal. This sac was opened by cautery, evacuating a molasses-like fluid. The whole of the growth was burnt off. A few days ago it had healed over and was emptied of a similar material in the same way. This material was very stringy and thready, in color like the fluid obtained from a hematoma. He would like to know whether this was a malignant growth. The hearing was affected and there was some discomfort at the time ; he ventured a good prognosis.

Dr. BUCK : Did you strike exposed bone ?

Dr. WILSON : No ; no fistula or sinus ; the quantity of fluid was limited.

Dr. QUINLAN reported **a case with a continuously high temperature** of $104\frac{1}{2}^{\circ}$ – 106° F. for ten days. The patient was semi-delirious ; put the hand to the ear ; had a superficial abscess of the breast ; had a bulging *Mt* and canal wall. The *Mt* was incised. The temperature fell after this procedure and the general condition was excellent. Very little pus followed and a moderate quantity of blood. For ten days the patient had had ice-baths to lower the temperature. There was very little tenderness over the mastoid.

Dr. GRUENING thought that such a high temperature in adults was very rare as a result of otitis media. Was not surprised that there was not pus, as we all know that the streptococcus is found in the blood or serum. It may be the cause of high temperature even though there may not be pus.

Dr. KIPP remarked that Dr. Orne Green recently discovered that in the severest cases often only the staphylococcus was present and not the streptococcus.

Dr. COWEN thought that if such a temperature had lasted so

long the *Mt* would have perforated. He was inclined to believe that the temperature was due to some other condition, and the defervescence to the amelioration of this condition.

Dr. GRUENING agreed with Dr. Cowen.

Dr. TOEPLITZ reported **a similar case in a child** of twenty-one months, with a temperature varying from 101° to 104° F. There was inflammation of the throat, not diphtheritic, much swelling four weeks previously, with cervical lymphadenitis. For three weeks a temperature of 102° F., pulse 120; heavy breathing; tonsils swollen, especially below; no abscess; ears apparently normal. Incised the tonsils below; naso-pharynx still obstructed; general condition weaker and weaker. This condition kept up for three weeks, the nose then became clearer. The temperature then advanced to 105° F.; there was pain in the ear, and the left ear discharged; T. $104\frac{1}{2}^{\circ}$ F.; the right ear discharged and the temperature went down. He thought that it was due to an acute non-diphtheritic infection of Luschka's tonsil, which lasted four weeks and patient finally recovered.

Dr. QUINLAN thought that we often had an acute inflammation of the Luschka tonsil—a parenchymatous inflammation,—which originates and retains infection, especially in diphtheria. He thought that this might easily account for the temperature and the involvement of the surrounding tissues.

Dr. TOEPLITZ related the history of a case with **various auditory sensations and hallucinations**.

Dr. GRUENING reported that, three weeks before, he saw a boy, five years old, said to have **mastoiditis, with a fluctuating swelling behind the auricle**. History: Was taken sick two weeks before, complained of the ear for one day; temperature very high, at times $105-6^{\circ}$ F., at others normal. It was thought to be malaria and quinine was given in large doses. After one week the ear began to stand out. Ichthyol was used for one week. Operation: There had been no otorrhœa at any time; the *Mt* was incised, no pus; the mastoid was opened, wholly diseased to the tip, with a large quantity of pus, and was cleared out and an opening made into the antrum. The roof was carious, and on scraping away granulation tissue, brain matter oozed into the antrum. This was examined and declared to be granulation tissue. A drain was introduced into the antrum. There was no fever and the patient felt well. *5th day*: T. 105° F.; large flow of pus from the ear indicated an evacuation of a brain

abscess through the ear. Further operation denied. One week later, five days ago, the patient became drowsy. 2d operation : Exposed squama and removed the granulation tissue on the dura ; introduced forceps and pus escaped ; split the dura and opened a large cavity in the brain. The boy is doing well.

Thought we recognized our cases too late, in children, after swelling had occurred over the mastoid. In the above case the streptococcus existed both in the mastoid and in the brain abscess.

Dr. TOEPLITZ said that he had seen the patient two weeks before Dr. Gruening. At that time there was no bulging of the *Mt*, nor of the mastoid ; no evidence at that time of mastoiditis.

Dr. J. L. ADAMS asked as to whether the brain or the mastoid abscess was considered as primary.

Dr. GRUENING : The mastoid.

Dr. KIPP reported a case in which **mastoiditis and brain abscess resulted from a furuncle.**

Dr. GRUENING reported the case of a man too dizzy to walk, who gave the history that, six weeks before, he had suffered from otalgia followed by discharge, with headaches at times. Examination showed no fever, no headaches, good appetite, no tenderness, profuse discharge, bulging upper-posterior wall of canal, no *Mt*, granulations everywhere. He said he had had no ear disease before. Irrigations every two hours were ordered. There was optic neuritis in the eye on the same side, and the patient could not micturate. Operation : Very large abscess of the mastoid ; sigmoid groove carious and destroyed in spots ; sinus bare ; caries of the floor of the antrum ; semicircular canal open ; ossicles carious (hammer and anvil). Thought that the dizziness might either be due to disease of the semicircular canal or to a cerebellar abscess.

Dr. FRIDENBERG thought that these cases demonstrated the frequent latency of mastoid affections. Thought that a profuse discharge, too profuse to come from the middle ear, indicates mastoid invasion and should call for operation.

Dr. GRUENING agreed.

Dr. DUANE thought that, in Dr. McKernon's case of blowing noise in the ear, the case was, very possibly, due to vascular disturbance in the tympanum and might be remedied by the use of a vaso-motor stimulant like nitroglycerine.

Dr. WHITING asked Dr. Gruening as to whether, when the semi-

circular canals were carious, there was not an absence of vertigo. There must be destruction of the vestibular branch, and the seat of the dizziness must be farther in.

Dr. GRUENING said that he did not mean to say that the nerve was destroyed. There was considerable vertigo in this case.

Dr. KIPP had a case in which **accidental opening of the semicircular canal** was followed by profuse and prolonged discharge of lymph.

Dr. KNAPP spoke as to the **advisability of paracentesis**. He had done a paracentesis and internal Wilde's up into the attic in a cases of acute otitis involving Schrapnell's membrane ; followed by primary union with relief of all the symptoms. This procedure often prevents mastoid complications or ameliorates them when present. It should be done thoroughly so as to go through the periosteum.

Dr. GRUENING thought that the Society would agree with Dr. Knapp. The statement had been made in the Society that when the paracentesis was thoroughly done it was never necessary to repeat. Recently he had a case in which he had to repeat the operation on four successive days ; bringing down the temperature each time and probably averting mastoiditis.

Dr. MCKERNON had similar cases.

Dr. KIPP reported a case of **sinus phlebitis**.

Dr. GRUENING questioned whether it was advisable to close the wound in the neck in every case.

Dr. KIPP stated that he had closed the wound in this case because there was no pus ; the wound was perfectly pure.

Dr. GRUENING had congratulated himself at times on having kept the wound open, as the vein afterwards infected the wound.

Dr. KIPP would certainly have quickly opened the wound under those conditions.

Dr. GRUENING : The point was as to the closure.

Dr. WHITING had had to rip the wound open even in resection of the vein.

Dr. MCKERNON did not see why, in cases of resection of the vein, the wound should not be closed.

Dr. WHITING reported the **finding of a double internal jugular** of the left side, both very large, in a case in the dissecting room.

REPORT ON THE PROGRESS OF OTOTOLOGY DURING THE FIRST QUARTER OF THE YEAR 1899.

BY DR. A. HARTMANN, BERLIN.

Translated by Dr. ARNOLD H. KNAPP.

ANATOMY OF THE EAR.

1. CANNIEU, A. Researches on the terminal apparatus of the auditory nerve. *Journ. de l'anatomie*, etc., vol. xxx., No. 1.

2. TRIFILETTI, A. Experiments on the semicircular canals of doves. *Gazzetta degli ospedali*, No. 19.

3. ESCHWEILER, R. Comparative anatomy of the muscles and of the topography of the middle ear of different mammals. *Arch. f. mikrosk. Anatomie und Entwicklungsgeschichte*, vol. liii., 1898.

4. BONOME, L. The anatomical peculiarities of the mastoid process and its topography relative to aural surgery. *Arch. ital. di Otologia*, etc., vol. xiii., p. 233.

1. CANNIEU examined the epithelium of the maculæ and cristæ acusticæ in numerous animals and in man, and could distinguish two types: The one in the rodents, where three rows of cells were superimposed, one being composed of hair cells, and the other two of supporting cells. The second type, found in beasts of prey and in man, contains four rows of cells, of which the hair cells occupy two rows. The cells are similar in their build, the cell-body tapers towards its free end while at its base it divides into several long fibres. The hair cells are characterized only by their hairs. The nerves terminate in a sort of ramification; the separate branches had small heads and are in contact with the body of the hair cell. Some nerves terminate free between the hair cells.

KRAUSE.

3. ESCHWEILER contributes an interesting and creditable communication on the comparative anatomy of the middle ear. The duck-bill has no stapedius muscle; the tensor tympani is composed of two parts, one of which is connected with the pharyngeal muscles, the other arises independently from the labyrinthine wall. A true Eustachian canal is absent and the pharyngeal glands protrude into the middle ear. In the echidna the membrana flaccida contains radially arranged muscular fibres. The tensor tympani in this group is independent of the Eustachian canal and the pharyngeal muscles, and arises from the floor of the tympanum. There is no stapedius. In the *manis javanica* the stapedius is present but the tensor tympani is wanting. The drum is surrounded by a peculiar erectile body which influences tension according to the state of congestion. In the mouse, the tensor tympani also has a double origin, though the two muscular bellies very soon unite. This muscle in the cat arises from the petrous portion of the temporal bone. KRAUSE.

4. A topographical study with illustrations of the various anatomical varieties of the mastoid process with reference to retro-tympanic field of operation and the relations of the brain to the middle and internal ear. The author values percussion of the mastoid process after retraction of the soft parts. GRADENIGO.

PHYSIOLOGY OF THE EAR.

5. HAMMERSCHLAG. On the tensor reflex. *Arch. f. Ohrenhkl.*, vol. xlvii., p. 1, and OSTMANN. Remarks on preceding paper. *Ibid.*

6. EGGER. On the physiology and pathological physiology of the labyrinth in man. *Centralbl. f. Nervenheilk. u. Psychiatrie*, vol. x.

7. URBANTSCHITSCH. The influence of auditory sensation on handwriting. *Arch. f. die gesammte Physiologie*, vol. lxxiv., 1899.

5. HAMMERSCHLAG reports several experiments, which he had tried in the course of an extensive investigation to determine the course of the tensor reflex, which coincide with the results obtained by other investigators and especially Pollak. The tensor tympani reacts reflexly to acoustic stimulation, especially to high tones. If the drum is destroyed on one side and the hammer freed from its articulations so that it remains hanging to the tensor tendon, it will be noticed to move distinctly if a sound is produced in front of the other and intact ear. If the drum of the second ear is also

destroyed and the sound conduction hindered, the reflex quivering of the tensor became weaker or invisible. The experiments were carried on on young cats and dogs. They are more difficult on older animals. Hammerschlag finally criticises OSTMANN's results, to which Ostmann replies though without adding to the knowledge of the subject. BLOCH.

6. EGGER in two clinical observations finds a confirmation of the Mach-Breuer hypothesis, that the semicircular canals serve for the perception of angular acceleration, and the utriculus for the perception of the position of the body from the vertical.

CASE 1.—Man, aged forty-three, recently totally deaf after syphilitic caries of the internal ear. Reflexes and sensation normal. Marked static and taxic disturbances. Examination with the centrifuge shows presence of sensations of passive total movements and accompanying rotatory nystagmus. Cerebellar lesion excluded. *Diagnosis*: Lesion of the static organ (utriculus), with preserved organ of the circular canals, which perceives passive total movements and compensatory ocular movements.

CASE 2. Bulbar tabes; total deafness. No disturbance of static and locomotor movements; with the centrifuge shows complete want of the perception of passive total movements and of rotatory nystagmus. *Diagnosis*: Destruction of circular canals with preservation of the utriculus. BRÜHL.

7. Auditory sensations may produce marked changes in handwriting, which differ according to whether high or low tones react upon the ear. Harmonica tones were employed. Deep tones cause in many people a marked lessening of the tone of the muscles employed in writing; the writing becomes unsteady. High tones produce an opposite effect. The tone of the muscles of the arm is increased, sometimes to such an extent as to produce a cramp. The letters of the writing appear stiff, smaller, and close together. HARTMANN.

GENERAL.

a.—REPORTS AND GENERAL COMMUNICATIONS.

8. GERONZI. Clinical report of the scholastic year 1896-97 of the otological clinic of the University, Rome. *Arch. ital. di Otol.*, etc., vol. viii., pp. 65, 138.

9. ARSLAN. Report for 1897 of the ear, nose, and throat clinic in Padua. *Ibid.*, pp. 75, 113.

10. GAVILLO. Report, from June 30, 1896, to June 30, 1897,

of the ear, nose, and throat clinic of the University in Turin. *Ibid.*, vol. vii., p. 377, and vol. viii., p. 83.

11. LIEBMAN. Lectures on disturbances of speech. 3d number: *Deaf-mutism*, Berlin, 1898. O. Coblenz.

12. POLLNOW. The requirements of hearing of railway employés and the examination for the same. Lecture given to the Society of Railway Surgeons in Cologne, Sept. 13, 1898. F. Weigel, Nürnberg.

13. HAUG. Remarks on the treatment of the most frequent aural affections. *Deutsche Praxis*, Nos. 3, 4, and 5.

14. ALDERTON, H. A. Some unusual aural cases. *Annals of Otol., Rhinol., and Laryng.*, Feb., 1899.

15. MANHATTAN EYE AND EAR HOSPITAL. 29th Annual Report, for the year ending Sept. 30, 1898.

16. BROOKLYN EYE AND EAR HOSPITAL. 30th Annual Report, for the year 1898.

8-10. The ear clinic in Rome treated 897 patients, in Padua 1224, and in Turin 1169. The reports give statistical tables and descriptions of the more important cases. GRADENIGO.

11. This is a complete description of deaf-mutism and of the results obtainable by treatment. Insufficient attention and unreliable memory are important factors in the etiology. LIEBMAN distinguishes four forms of deaf-mutism: 1. Motor variety (the children comprehend what is spoken, but do not speak). 2. Sensory variety (the children do not understand what is spoken). 3. Motor and sensory varieties. 4. Transitional cases, between deaf-mutism and stuttering. The first group is the most frequent. Four histories are fully described. The treatment is very tedious and painstaking, though generally thankful, and requires, on an average, three to four months. HARTMANN.

14. The first case was that of a young man, twenty-seven years of age, who complained of deafness and tinnitus in the left ear. The watch was heard at twelve inches. With the c³ fork by B. C., when placed on the mastoid process of the left ear, two notes were heard (with the finger in the right ear to shut out A. C.), one a little later than the other; at the end of thirteen seconds the note heard by the left ear ceased, while that heard by the right ear continued to be heard for seventeen seconds more. The c³ fork was the only one that gave such reaction. He reports also two cases of peculiarly shaped (conical) exostosis of the ex-

ternal auditory canal. In each case the exostosis was very sharp-pointed, like a cone.

A fourth case was one of marked vertigo, following stimulation of the nerve endings of the middle ear, without change in labyrinth tension. In this case the carious ossicles had been removed, but the stapes was left in situ. Syringing or pressure on the stapes caused severe vertigo, dilatation of the pupils, a feeling of oppression in the breathing, and a decided weak action of the heart.

GORHAM BACON.

15. Surgeons, Aural Department: Drs. Roosa, Pomeroy, Webster, Emerson, Lewis, and Hepburn. Number of new patients in Ear Department, 3366; number of ear operations, 241; incision for furuncles, 50; paracentesis of mem. tympani, 20; removal of polypi, 40; excision of ossicles, 4; mastoid operation, 36; opening of lateral sinus, 5; opening of brain abscess, 2.

GORHAM BACON.

16. Surgeons, Aural Department: Drs. Mathewson, Prout, Rushmore, Sheppard, and Alderton. Diseases of the ear: New patients, 3396; operations, 372; incision of furuncle, 107; paracentesis of mem. tympani, 74; removal of polypi, 75; removal of carious ossicles, 6; mastoid operation, 25; removal of adenoids, 12.

GORHAM BACON.

b.—GENERAL SYMPTOMATOLOGY AND PATHOLOGY.

17. ROSENBAACH. Involvement of the ear and nose in general arterio-sclerosis. *Deutsche med. Wochenschr.*, No. 4, 1899.

18. OUSPENSKI. A case of reciprocal influence of a diseased ear on a sound one.

17. Referring to a paper with this title by Heermann, ROSENBAACH cites from his book on the diseases of the heart and their treatment, published in 1897, showing that the involvement of the ear and nose in general arteriosclerosis had been noted and thoroughly discussed by him.

NOLTENIUS.

18. After removal of a cotton plug from one ear, the hearing in that ear and also in the other was raised to the normal. The hearing for the watch was formerly 2.5 cm; it is not stated what it later was.

ZIMMERMAN.

c.—METHODS OF EXAMINATION AND TREATMENT.

19. LUXENBURGER. The new local anaesthetic, nirvanin. *Münch. med. Wochenschr.*, No. 1, 1899.

20. VILLA. Anæsthesia with holocain in the nose, ear, and throat. *Arch. ital. di Otol.*, etc., vol. viii., p. 9.

21. URBANTSCHITSCH. Methodical hearing exercises and their value for the deaf. *Wien. klin. Wochenschr.*, No. 8, 1899.

22. BRUNNER. Contribution to the discussion of the methodical hearing exercises in the school for deaf-mutes. *Wiener klinisch Wochenschr.*, No. 12, 1899.

19. Nirvanin is superior to cocaine and the cocaine combinations to produce regionary and infiltration anæsthesia. For the ear and nose $\frac{1}{4}$ per cent. solution is employed, but in inflamed tissues $\frac{1}{2}$ per cent. solution is better. This agent may be of benefit in the opening of the mastoid process. SCHEIBE.

20. VILLA has employed holocain in 66 operations. The solution does not change on boiling and so can be sterilized; the cost is moderate, the taste not disagreeable, and it does not cause unpleasant symptoms. The 10 per cent. solution has a greater and quicker anæsthetic action than cocaine, and on long application produces ischemia. GRADENIGO.

21. In a rather extensive paper URBANTSCHITSCH describes the method of hearing exercises. These employ partly various sources of sound and partly a methodical instruction with speaking sounds. A healthier hearing function is stimulated, and on the other hand an improvement in distinguishing sounds. The author recommends an extended use of methodical hearing exercises in chronic deafness, as they can be only of advantage to the deaf without interfering with the rest of the treatment. In the cases where every treatment for the condition causing the deafness has been without avail the hearing exercises prove of great value, as it is possible to obtain through them an improvement in differential hearing with, perhaps, no true increase in hearing, but a better use of the hearing which remains. POLLAK.

22. BRUNNER is in favor of the methodical hearing exercises for deaf-mutes. POLLAK.

EXTERNAL EAR.

23. MARTIN, W. A. Scalding oil in the ear and the result. *Laryngoscope*, March, 1899.

24. HENKE. Supernumerary polyotia. *Monatschr. f. Ohrenhkl.*, No. 2, 1899.

25. LAMANN. The tamponade treatment of otitis externa furunculosa. *Monatschr. f. Ohrenhkl.*, No. 12, 1899.

26. STETTER. Myringitis chronica sicca and its treatment. *Monatschr. f. Ohrenhkl.*, No. 3, 1899.

27. COZZOLINO. A case of pseudo-actinomycosis of the external ear produced by a new thread bacterium. 1st part. *Arch. f. Ohrenheilk.*, vol. xlvii, p. 37.

28. COMPAIRE. Curious clinical cases. *Ann. des mal. de l'or., du lar.*, xxv., 3.

23. The case was that of a young woman who had an earache and who poured hot olive oil into the canal for the relief of pain, with the result that the external ear and drumhead were severely burned. When the more acute symptoms had subsided it was found that there was a large kidney-shaped perforation in the drumhead. The perforation finally closed.

GORHAM BACON.

24. The auricle of a child showed in addition to the enlargement of the lobule a marked broadening of the scaphoid fossa, which was divided by a ridge into two grooves. Each of these presented a Darwinian tubercle at the helix. Developmental retardation was also seen in the corresponding hand.

KILLIAN.

25. A cotton plug wound on a probe and impregnated with the following ointment: zinc oxide 4.0, carbolic ac. 0.6, white vaselin 30.0, is introduced into the inflamed ear-canal to the drum, producing considerable pressure. This procedure, quite painful at the beginning, must be repeated daily.

KILLIAN.

26. The verbose and inexact description gives a very uncertain and vague picture of the disease reported.

KILLIAN.

27. COZZOLINO found in an acute suppuration from the left ear of a woman eight months pregnant, an excoriated place in the mastoid region which resembled clinically, actinomycosis. The pus contains instead of greenish granules, small white, and a few blackish red seeds. These were composed principally of a particular kind of thread bacterium. The specimens showed a ray fungus. The woman subsequently died of a recurrence in the lungs and of a basilar meningitis, which will be described in the 2d part.

BLOCH.

MIDDLE EAR.

a.—ACUTE OTITIS MEDIA.

29. GREEN, J. ORNE. The primary infection in acute sup-

purations of the tympanum. *The Journal of the Boston Society of Med. Sciences*, Jan., 1899.

30. SHEPPARD, J. E. The manner in which the mastoid becomes involved in the middle-ear affections. *Brooklyn Med. Journal*, March, 1899.

31. BURNETT, CHAS. H. A case of acute mastoiditis; perforation of the medial plate of the process and consecutive abscess in the neck. *University Medical Magazine*, Feb., 1899.

32. MORTON, H. M. A case of bilateral mastoiditis. *Laryngoscope*, Feb., 1899.

33. LUC. Two cases of Bezold's mastoiditis. *Arch. intern. de lar., d'ot.*, xii., 1.

34. ONSPENSKI. A case of otitis due to grippe, with cholesteatoma and mastoiditis, cured without operation. *Ann. des mal. de l'or. du lar.*, xxv., 1.

29. GREEN gives the results of bacteriological examination in 101 cultures made from the first drop of pus evacuated after paracentesis of the drum-membrane in acute suppuration of the tympanum. The cases selected were all acute suppurations requiring paracentesis for evacuation of secretion and relief of pain. The meatus was thoroughly cleansed and all aseptic precautions taken in regard to the instruments.

In 73 out of the 101 cases pure cultures were reported, viz.:

Staphylococcus, (albus 8, aureus 9, variety not stated 19).....	36
Streptococcus.....	19
Pneumococcus.....	10
Bacillus diphtheriæ.....	2
Bacillus pyocyaneus.....	3
A capsule bacillus.....	3

There were 28 cases of mixed infections. Some of Green's first cultures proved the presence of pyogenic organisms in the very earliest stages of the disease.

GORHAM BACON.

30. In this paper, SHEPPARD calls attention to the anatomy of the mastoid cells, the antrum, aditus, and attic, and explains how the mastoid cells are liable to be affected. He says that "there is no special reason why, if left alone, the pus will perforate the outer rather than the inner cortex, hence it becomes plain why the external symptoms of mastoiditis should never be waited for, and why conservatism compels an early operation." The germs most frequently present in acute middle-ear inflammations are the

streptococcus and the pneumo-diplococcus. One is more apt. to find the staphylococcus in chronic suppurations.

As a rule, the most virulent infections are due to the streptococcus.

GORHAM BACON.

31. The case reported by BURNETT was that of a man, thirty-two years old, who had had an acute otitis media of three weeks' duration, with mastoid symptoms—chiefly pain. When first seen by the writer, there was a copious discharge from the right ear, an infiltrated and narrowed canal, and a perforation in the membrana tympani. The mastoid region appeared to be normal except that behind and in front of the insertion of the sterno-mastoid muscle there was a swelling, extending downward for about three inches. Pressure on this swelling forced pus through the perforation in the drumhead.

A diagnosis of Bezold's mastoiditis was made. A free incision was made in the swelling and a grooved director was passed into the mastoid cavity. Solutions were syringed into the incision and escaped through the external meatus. A drainage-tube was inserted into the neck wound, the treatment consisting in the irrigation of the wound and the ear, without further operation. The patient made a good recovery and the hearing became normal.

GORHAM BACON.

32. The case was that of a woman, aged forty-four, who was a sufferer from naso-pharyngeal catarrh. As a result of using a nasal douche, she suddenly had pain in both ears, followed by discharge from the auditory canals and swelling and redness of the tissues over the mastoid processes. The pain was severe and there was considerable elevation of temperature. Both mastoid processes were opened and pus and granulation tissue removed. The patient recovered with good hearing.

GORHAM BACON.

33. CASE I. Man, twenty-three years old; a slowly developing relapse of an otitis two years previous. At the first operation, the mastoid process and antrum contained granulations and there was a collection of pus to the inner side of the sterno-mastoid extending to the mastoid tip. Six weeks later, owing to profuse purulent discharge persisting from the depth, another operation had to be undertaken and the greater part of the mastoid was removed, fully exposing the abscess cavity. The antrum and middle ear were curetted. Complete facial paralysis. The suppuration ceased six months later, but the facial paralysis partly remained.

CASE 2. Was first seen after the purulent process in the neck had been incised and a fistula presented, 5 cm below mastoid and at posterior border of sterno-mastoid leading to the inner side of the mastoid process.

ZIMMERMANN.

34. After influenza a woman, thirty-two years of age, suffered with a double acute otitis, pain, and mastoid swelling. The discharge from a perforation up and back was muco-purulent in the right ear. The discharge also contained small epithelial scales which ONSPENSKI regarded as cholesteatomatous. Recovery took place after irrigations of the middle ear through the Eustachian tube and the ear-canal for a period of six weeks. This leads the author to decry against the too frequent mastoid operation.

ZIMMERMANN.

b.—CHRONIC OTITIS MEDIA.

35. ROSATI. Oxygen in chronic purulent otitis. *Arch. ital. di Otol.*, etc., vol. viii., p. 9.

36. GOTTWALD. Caries of the middle ear and its relation to cholesteatoma from a medico-legal aspect. *Vierteljahrschrift f. gerichtliche Medicin*, vol. xvii., supp. 1, 1899.

37. GRADENIGO. Contribution to the surgery of the middle ear and the mastoid. *Arch. ital. di Otol.*, etc., vol. viii., pp. 33, 151, 265.

38. MOURE. Immediate suture of the auricle after the radical cure for otorrhœa. *Rev. hebdom. de lar. d'ot.*, 2, 1899.

39. ROBINSON, H. BETHAM. A case of squamous-celled carcinoma following a chronic suppurative otitis media. *Fourn. of Laryng.*, March, 1899.

35. ROSATI used oxygen exclusively in the treatment of 15 middle-ear suppurations. The gas was introduced into the ear canal with Politzer's bag; later directly from the gas apparatus. Except in one case the results were favorable.

GRADENIGO.

37. At the Turin clinic the mastoid process was opened in 75 cases of acute inflammation, in 100 chronic cases, in 53 extradural abscesses and suppurations, in 6 sinus thromboses, in 4 cerebral and 5 cerebellar abscesses, in 7 otitic lepto-meningitis.

GRADENIGO.

38. MOURE recommends the primary closure of the retro-auricular wound in every case, and believes thus to have solved all the difficulties of after-treatment. The sutures were removed

on the eighth day, and two days later the patient returns to his occupation without bandage. Moure does not make use of any plastic procedure. ZIMMERMANN.

39. A woman, aged forty-six, had suffered for twenty years with discharge from the right ear. Four years previously the discharge had increased, with deafness, tinnitus, and shooting pains in the head. Four months previously the headache on the right side had become continuous, the discharge being thick and greenish yellow.

On examination, the meatus was blocked with soft, easily bleeding granulations. Tenderness was present over the mastoid region, and some weakness of the face muscles was evident.

The antrum was opened and cleared out. Soon after the operation, sprouting of granulations took place at the lower edges of the wound; and granulations recurred in the meatus; with fulness in front of the ear below the zygoma. Pain became severe. Sections of the growth showed it to be squamous epithelioma. Nothing further was done. ARTHUR CHEATLE.

c.—COMPLICATIONS OF CHRONIC PURULENT OTITIS.

40. BELL, JAMES. A case of abscess of the temporo-sphenoidal lobe, presenting unusual features; operations; recovery. *Annals of Otol., Rhinol., and Laryngol.*, Feb., 1899.

41. BERENS, T. P. A case of sigmoid and lateral sinus thrombosis, from acute suppuration of the middle ear; operation; relief; subsequent abscess in the temporo-sphenoidal lobe of the brain; operation; death; autopsy. *Annals of Otol., Rhinol., and Laryngol.*, Feb., 1899.

42. GREEN, J. ORNE. The bacteriology of mastoiditis. *The Four. of the Boston Soc. of Med. Sciences*, Jan., 1899.

43. MILLIGAN, W. Some observations upon the pathology of intracranial suppuration of otitic and rhinitic origin. *The Manchester Med. Chronicle*, Jan., 1899.

44. SHENNAN, T., and MILES, A. Aphasia, following abscess of the temporo-sphenoidal lobe. *British Med. Four.*, Jan. 28, 1899.

45. NICOLL. A case of cerebellar abscess successfully treated by operation. *The Glasgow Med. Four.*, Jan., 1899.

46. KERR, J. Two cases of lateral sinus pyæmia. *British Med. Four.*, Feb. 11, 1899.

47. MERKENS. A contribution to the subject of otitic brain abscess. *Deutsche Zeitschr. f. Chirurg.*, vol. li., p. 157.

48. MEYER. A case of otitic sinus thrombosis ; pyæmia ; recovery. *Deutsche Zeitschr. f. Chirurg.*, vol. li., p. 157.

49. BIEHL. Extensive retrograde transportation of thrombosed material after an otitic thrombo-phlebitis of the left sigmoid sinus. *Monatschr. f. Ohrenheilk.*, No. 1, 1899.

50. LAURENS, G. Two cases of otic pyæmia without apparent involvement of the lateral sinus. *Ann. des mal. de l'or. du lar.*, xxv., 1.

40. The patient, male, twenty-eight years of age, had a chronic otorrhœa, followed by mastoid disease. The mastoid process was opened by Dr. Buller, but no pus was found. He had intense headache, with vomiting and delirium, and a temperature of 104° F. There was retraction of the head, and the neck was quite stiff. Later there was photophobia, stupor, and subsultus tendinum. The patient would also cry out every few moments. The pulse became slow and the temperature fell to 99½° F. Facial paralysis of the left side was noticed, and power of the left arm suddenly disappeared, with impairment of sensation all over the same arm. The patient at this time was transferred to Dr. BELL's care. The original mastoid incision was continued upwards. On opening the dura, a flow of pus occurred (extradural abscess). Later the temporo-sphenoidal lobe was opened, and two abscesses were found. Cultures from these abscesses showed pure growths of the streptococcus pyogenes. The patient afterwards returned, on account of having had a convulsion. There was at this time a sinus leading to carious bone.

GORHAM BACON.

41. The patient, male, aged twenty, had mastoid disease as a result of acute otitis media. His condition improved temporarily, but he soon complained of severe pain, tenderness on pressure over the mastoid process, and vertigo. Temperature 103° F. ; pulse 100. He later had retraction of the head, inactive dilatation of the left pupil, distention of the retinal vessels, and slight optic neuritis. The mastoid cells were opened and the sigmoid sinus exposed and a firm clot removed. The blood current was re-established in the sinus and the patient was apparently convalescent when, on the nineteenth day after the operation, he had a rise in temperature followed by profuse sweating and a rapid pulse.

The patient died. At the autopsy the superior petrosal sinus was found occluded in its whole length by a clot. No pus. The pia and arachnoid were œdematous and the quantity of the cerebro-spinal fluid was increased. In the left temporo-sphenoidal lobe a small abscess was discovered. Death seemed to be due to sepsis combined with œdema of the brain, and softening and abscess formation of the temporo-sphenoidal lobe.

GORHAM BACON.

42. GREEN gives a table compiled from 144 mastoid operations, in which cultures were made from the interior of the mastoid. He says in this paper that he "has considered the disease merely from the bacteriological standpoint, and these figures show that we may have in mastoiditis all of the more common varieties of microbes, that the staphylococcus is much more common than the streptococcus, and that, so far as the few fatal cases can prove anything, they show that the staphylococcus is equally fatal with the streptococcus. He does not believe that the special variety of micro-organism is of much importance in the disease.

"From a clinical point of view, vastly more depends on the histological and anatomical peculiarities of the bone than on the variety of microbe."

GORHAM BACON.

43. This paper is an admirable *résumé* of the subject and should be carefully read. MILLIGAN relates numerous cases to illustrate important points.

CHEATLE.

44. At a meeting of the Edinburgh Medico-Chirurgical Society held on January 18th, SHENNAN and MILES read a paper on a case of aphasia, following abscess in the temporo-sphenoidal lobe secondary to middle-ear suppuration, the auditory (word-hearing) centre not being involved. The day following evacuation of the pus, it was observed that the patient showed symptoms of paraphasia and word-intoxication. He was unable to name objects at sight. This amnesia verbalis continued throughout, and there was practically no word-deafness. When this was present, as occasionally happened, it was relieved at once by drainage being improved and thus relieving pressure on the auditory centre. He was able for a time to play a game of dominoes, and to read the newspaper with understanding. Later the case became worse, and he died with symptoms of general compression. At the post-mortem examination, an old abscess, with inspissated contents, was found occupying practically the whole of the temporo-sphenoidal lobe, with the exception of the posterior part of the

superior convolution. A recent abscess was found in the position of the external capsule, and from this a series of recent abscesses extended backwards as far as the level of the angular gyrus, which were accountable for the later symptoms.

The authors stated that the case supported the theory advanced by Dr. Wm. Elder, that there exists a special area in which the memory of nouns and names is stored in close proximity to the auditory centre but not identical with it. He places it below that centre in the posterior parts of the second and third temporo-sphenoidal convolution. The primary abscess in the lobe would interrupt fibres passing from such an area to Broca's convolution.

CHEATLE.

45. At a meeting of the Glasgow Medico-Chirurgical Society, held on Nov. 4, 1898, NICOLL showed a man, aged twenty-six, who having had discharge from the left ear for ten years was seized, one month before coming under observation, with pain, general headache, and facial paralysis. These symptoms were soon followed by vomiting, shivering, tenderness over the mastoid, and drowsiness. The antrum was opened by Barr and cleared of pus; for two days he was apathetic and yawned repeatedly, and nystagmus with variability of the left pupil was noticed. On the third day, the temperature was subnormal, pulse 96, and the left pupil was twice as large as the right. Nicoll then explored the lateral sinus, which was found healthy. On further operative investigation, an abscess was found at the edge of the occipital bone. As progress was slow, six weeks later the cerebellar fossa was opened and another abscess was found which communicated with the one previously opened. Recovery.

ARTHUR CHEATLE.

46. The first of KERR's two cases was fatal in spite of free operation, ligature of internal jugular, etc. Antistreptococcic serum produced no result. An interesting point in the case is that infection appeared to have reached the sinus by extension from the floor of the middle ear through the vault of the jugular dome.

The second recovered; the serum was used in this case also, but appeared to have produced no beneficial effect.

ARTHUR CHEATLE.

47. A man, thirty-two years old, was operated on by a specialist according to the radical method on account of a left chronic otorrhœa. Discharged two weeks later notwithstanding headache. These symptoms increased and patient became stuporous. When admitted to the hospital in Moabit he was in coma, 36.7°,

pulse 59, partial third-nerve paralysis on the affected side, crossed paralysis of the extremities. The diagnosis of abscess of the temporal lobe was made. Trephine opening through squama. Operation was interrupted for three-quarters of an hour on account of asphyxia. The temporal lobe was incised and fetid pus escaped. Death on the following morning. *Autopsy*: Large defect in the upper bony wall of auditory canal, the posterior wall is partly wanting, a depression in the mastoid behind canal, œdema of the brain. As the ear had not been examined before last operation, the bony defect in the canal escaped notice and the trephine opening was placed in the squama. The antrum was found unopened. Bacteriological examination showed typhoid bacilli (or very similar) in the pus. BRÜHL.

48. A laborer, twenty-four years old, was admitted to the hospital in Frankfurt with the diagnosis typhoid. Right otorrhœa since childhood. Examination of the ear revealed nothing; no otorrhœa, no tenderness or swelling over mastoid. Temp. 40.5° - 37° ; chill, vertigo, vomiting, and headache. *1st Operation*: Sinus exposed, perisinuous abscess evacuated. Fall of temperature. After four days, recurrence of symptoms. *2d Operation*: Ligation of the int. jugular vein; no thrombus present. Mastoid process opened. A sequestrum was found in the depth next to the dura and the sinus. The sinus was freely opened and contained puriform thrombus. General condition good though pyæmic symptoms continued; rigors, temp. 35.6° - 40.6° , no metastases. Normal temperature after three weeks; wound healed.

The pyæmic symptoms after clearing out the sinus were referred to persisting infectious material in the jugular foramen; the extension was prevented by the ligation of the jugular vein. An otoscopic examination before the operation would have immediately detected an otorrhœa and the necessity of opening the mastoid. BRÜHL.

49. A soldier suffering from a chronic purulent otitis with cholesteatoma, extradural abscess, extensive thrombosis of the cerebral sinuses and jugular vein, and a double pleurisy, died. At autopsy a peculiar arrangement of thrombus formation was found, which was only explicable by a carrying back of the infectious material from the right transverse and sigmoid sinuses. The right inferior petrosal, cavernous, and kidney sinuses were thrombosed, also the ophthalmic vein, the left transverse sinus, and the vein of the Sylvian fossa. The author believes that the interfer-

ence with respiration from the pleural exudate and the marked tympanites had caused the backward circulation in the venous system.

KILLIAN.

50. In the first case the sinus wall was covered with fungoid masses but of healthy color, consistence, and pulsation. Though the wound-healing progressed favorably, pyæmic symptoms continued for two months.

In the second case, after repeated paracenteses, the sinus was exposed, aspirated, and found normal, though no pus had been found in the mastoid or antrum, or near the sinus. A periarticular abscess at the wrist was later opened. The general condition improved, the otorrhœa ceased, and after one month the child was cured.

ZIMMERMANN.

NERVOUS APPARATUS.

51. ERDTMANN, P. W. Disturbance of equilibrium associated with defect of hearing—labyrinthine vertigo (Ménière's disease). *Philadelphia Med. Journal*, Jan. 28, 1899.

52. WAGENHÄUSER. Deafness in the course of an osteomyelitis, caused by anæmia. *Arch. f. Ohrenhkl.*, vol. xlv., p. 33.

51. The patient had suffered from sudden attacks of vertigo during the preceding ten months. They increased in frequency so that she had about two a day. Besides the vertigo, she had a roaring tinnitus which was constant but exaggerated during these attacks, when she was obliged to hold on to something for support. Hearing defective on the affected side. During some of the attacks the patient almost lost consciousness. Pilocarpine was given, also quinine and nitro-glycerin. In 2½ months' time the attacks had entirely ceased and the hearing became normal.

GORHAM BACON.

52. A young man, seventeen years old, was taken ill with osteomyelitis after an accident. After repeated operations, the very anæmic individual suffered from bilateral deafness, vertigo, and dizziness. The last two symptoms disappeared on the improvement in his general health, though the deafness remained. The otoscopic examination was negative. According to the author the deafness was due to the anæmia.

BLOCH.

NOSE AND NASO-PHARYNX.

a.—GENERAL PATHOLOGY.

53. GROSHEINTZ, A. The relation of hypsistaphylia to leptoprosopia. *Arch. f. Laryngol.*, viii.

54. HAJEK. Headache in affections of the nose and the accessory cavities. *Wien. med. Presse*, No. 11, 1899.

55. MÜLLER. The connection between the diseases of the eyes and those of the nose and accessory cavities. *Münch. medicin. Wochenschr.*, No. 3, 1899.

56. RISCHAWY. The relations of chronic affection of the lachrymal passages and nasal disease. *Wien. klin. Rundschau*, No. 8, 1899.

57. GUYE. A case of nasal aprosexia without involvement of hearing. *Ann. des mal. de l'or., du lar.*, xxv., 2.

58. BRAISLIN, W. C. Ear diseases coexistent with adenoids of the naso-pharynx. An analysis of 110 cases. *Phila. Med. Four.*, Feb. 25, 1899.

59. THOMPSON, J. A. Headache from nasal causes. *Four. Amer. Med. Assoc.*, Jan. 14, 1899.

60. STEIN, OTTO J. Vertigo, especially as related to nasal diseases. *Phila. Med. Four.*, Jan. 7, 1899.

53. After E. Fränkel, with Siebenmann's aid, had shown by measurements that the palate index (height of palate x 100, divided by the breadth of palate measured between the two premolars) in 59 individuals with hypertrophy of the pharyngeal tonsil was almost the same as in individuals without hypertrophy, the author believes that the former theory on the cause of the high palate (hypsisstaphylia), as being the result of interfered nasal respiration, is refuted. He endeavored to find another dependent condition of the hypsisstaphylia, and found it in the relation of the shape of the palate and the skeleton of the face. The upper-face index is found by multiplying the height of the upper face (distance of naso-frontal suture from the alveolas of the superior maxilla) with 100 and divide with the face breadth (distance between the two zygomatic arches). When this index is below 50, the individual belongs to the group of chamæprosops (broad face); when above, to the leptoprosops (long face). Sixteen skulls were measured and gave the following results: 1. Hypsisstaphylia is usually associated with leptoprosopia. 2. Narrow nasal cavities (leptorhinia) and narrow orbits usually belong to hypsisstaphylia. 3. Hypsisstaphylia usually depends on a congenital racial condition of the skull and not an extra-uterine, later influence from nasal stenosis.

ZARNIKO.

54. The causes of headache are usually: 1, acute or chronic

affections of the accessory cavities ; and 2, certain hypertrophies of the nasal mucous membrane. In acute empyema the headache is usually neuralgic in character, while in the chronic empyemata more diffuse headaches of a less definite character are present. In acute empyema of the maxillary antrum, neuralgic pains occur in the area of the infra-orbital and supra-dental nerves ; in frontal affections, in the region of the infra-orbital nerve, though an inflammation of the maxillary antrum may alone cause pain in the region of the latter nerve.

Acute affections of the accessory cavities furnish the only anatomical proof for the influenza neuralgia in the distribution of the fifth nerve. Causal relation between nasal hypertrophies and headache must be found with caution. There is only one form which can cause headache without other changes in the organism. This is the pressure exerted for years by a hypertrophy of the anterior end of the middle turbinal on the tuberculum septi.

POLLAK.

55. A confirmation on the ground of personal examination of accepted facts.

SCHEIBE.

56. In some cases the naso-lachrymal canal may be compressed in the middle meatus. The author therefore recommends removal of the swollen anterior end of the middle turbinate before commencing treatment on the eyes.

POLLAK.

57. GUYE publishes a case of aprosexia in a child with adenoids, though the hearing in both ears was normal, to show that aprosexia may follow nasal stenosis without accompanying deafness.

ZIMMERMANN.

58. In this paper BRAISLIN gives the statistics of cases of adenoids coming under his observation. Almost all of these cases applied for relief of ear symptoms. The author believes in removing these growths as soon as they are diagnosed and that the ear should be treated some time after the operation.

GORHAM BACON.

59. The following conditions, illustrated by observed cases commonly cause headaches : hypertrophic and atrophic rhinitis, spurs and deflected septum pressing upon the turbinals, perforation of the septum, polypi, fibroma, later stages of sarcoma, tertiary syphilis, rhinoliths, flies depositing their eggs, foreign bodies, suppuration from the accessory sinuses, and intranasal adhesions.

M. TOEPLITZ.

60. STEIN related a case of a man, æt. forty-nine, who had

suffered for three months from severe vertigo, which was permanently cured by turbinotomy of the right middle turbinal and subsequent cauterizations of the inferior turbinal. The left membrana tympani was cicatrized and retracted. All theories on vertigo, particularly the nasal reflexes, are fully discussed.

M. TOEPLITZ.

b.—METHODS OF EXAMINATION AND TREATMENT.

61. HEERMANN. An aseptic galvano-cautery. *Arch. f. Laryng.*, viii.

62. CORDES. A modification of the Schötz-Krause double chisel. *Monatschr. f. Ohrenhkl.*, No. 3, 1899.

63. KATZ. Nose and ear instruments. *Berl. klin. Wochenschrift*, No. 5, 1899.

64. GAREL. A new electric snare for removal of adenoids. *Ann. des mal. de l'or., du lar.*, xxv., 2.

65. BREITUNG. A new instrument for the faucial tonsils. *Münch. med. Wochenschr.*, No. 2, 1899.

66. SÄNGER. Has gargling any value? *Münch. med. Wochenschr.*, No. 8, 1899.

67. DU MESNIL DE ROCHEMONT. Should angina patients be isolated? *Münch. med. Wochenschr.*, No. 10, 1899.

68. HALL, ERNEST. A new supporting gauge for the nasal saw. *Medical Record*, Feb. 18, 1899.

61. The wires are free except near the end of the handle, where they run in a vulcanite sheath. To prevent short-circuiting the nasal speculum must be made of glass. ZARNIKO.

62. A plate for the thumb was placed on the handle to permit of easier manipulation on the right side. KILLIAN.

63. Three new instruments: 1. Movable nasal curette. 2. Movable caustic applicator—both for hypertrophic posterior turbinates. 3. Caustic probe, with gold crown-shaped attachment for ear and nose. MÜLLER.

64. To prevent hemorrhage GAREL has designed an instrument where the electric snare runs in a curve similar to that of Gottstein's curette. ZIMMERMANN.

65. This instrument is a knife, cutting forward, fastened to Krause's snare. SCHEIBE.

66. SÄNGER made experiments to see where the gargle fluid

reaches and found that the tonsils and posterior pharyngeal wall were not touched, except by a very small quantity which dropped down by gravity. Hence, in acute inflammations gargling should not be advised, for this reason, and also because it is not rational to move inflamed parts (soft palate and palatal arches). He recommends mopping the affected parts. SCHEIBE.

67. In one month 18 cases in one ward, or 27% of all the patients were taken ill; in the two following weeks there were 19 more cases. The tonsils were red and swollen, follicular and lacunar inflammations, pseudo-diphtheritic membranes. In 3 cases articular rheumatism followed; in 1 case each, nephritis, pericarditis, endocarditis, and alarming cardiac weakness. The author in future intends to place each angina patient in the infectious ward. SCHEIBE.

68. In order to prevent the motor nasal saw from infringing upon the upper posterior pharyngeal wall, HALL adds a sliding gauge moved upon the supporting bar and fastened by a set-screw, so that with the collar placed against the upper lip of the patient the saw can be adjusted to any required distance into the nostril. M. TOEPLITZ.

C.—OZÆNA.

69. CHOLEWA and CORDES. On ozæna. *Arch. f. Laryng.*, viii., 1.

70. BRUCK. The treatment of genuine ozæna. *Arch. f. Laryngol.*, viii., 1.

71. HECHT. Reply to preceding paper. Bruck's answer. *Ibid.*

72. MEISSER. Chamæprosopia, an etiological factor in ozæna. *Arch. f. Laryngol.*, viii.

73. MCBRIDE. The treatment of ozæna. *British Med. Jour.*, Feb. 11, 1899.

69. After an introduction this paper is divided into two parts. In the first CORDES describes the microscopical findings. Extensive metaplasia of the normal ciliated epithelium to keratosed flat epithelium; marked round-cell infiltration, especially in the subepithelial layers; slight fatty-cell degeneration, presence of many Mastzellen; no peculiarity of the blood-vessels; atrophy of the erectile tissue. The changes in the bony structure are osteoporosis, an independent primary process. CHOLEWA in the second

part concludes as follows : The osteoporosis, entirely independent of the changes in the mucosa, can be compared to osteomalacia. The changes in the bone then influence the mucous membrane in a peculiar way through changes in the blood circulation. The glandular secretion becomes more alkaline and suitable culture medium for saprophytes. Hereditary lues is not one of the causes. The tropho-neurotic nature of ozæna (the reviewer's hypothesis) is rejected by the authors, agrees more or less with the results of this examination, and Pommer has found a tropho-neurotic cause for osteomalacia, which, according to the authors, is related to ozæna process.

ZARNIKO.

70-71. The controversy between BRUCK and HECHT is about the method of permanent tamponade of the nose with gauze recommended by Bruck. The latter finds this modification of Gottstein's methods excellent, with which Hecht disagrees.

ZARNIKO.

72. Under the direction of Siebenmann, MEISSER has made measurements to discover a connection between ozæna and the form of the face. Of forty ozæna patients there were thirty-nine chamæprosopes and only one leproprosop ; while in the normal the average is about the same. In ozæna patients, the upper face as a whole, and also its several parts, belong to the chamæprosopic type. As all chamæprosopes are not ozæna sufferers, there must be another factor, which the author believes to be the congenital metaplasia of cylindrical to pavement epithelium. Both changes stand in no connective relation to each other ; they are congenital. If the one is wanting, the characteristic picture of ozæna is imperfect.

ZARNIKO.

73. At a meeting of the Edinburgh Medico-Chirurgical Society held on Feb. 1, 1899, McBRIDE read a paper on the treatment of ozæna, with special reference to cupric electrolysis. The results in eight cases were given. McBride's general conclusion was that this method of treatment was probably the most successful yet suggested.

ARTHUR CHEATLE.

d.—SEPTUM.

74. DOUGLASS, BEAMAN. Papilloma of the nasal septum. *N. Y. Med. Journ.*, Jan. 1, 1899.

75. CLARK, J. PAYSON. Sarcoma of the nasal septum. *N. Y. Med. Journ.* Jan. 7, 1899.

74. DOUGLASS found in a woman, æt. sixty-four, a warty growth, three-quarters of an inch in diameter, upon the right side of the nasal septum and behind the tubercle. The fully described microscopical examination, illustrated by four pictures, revealed it to be a true papilloma. The differential diagnosis from Hopmann's fibroma oedematosum is given. M. TOEPLITZ.

75. In addition to the sixty-two cases of nasal sarcoma collected until 1896, ten cases are found related. Only one, a woman, æt. thirty-eight, with alveolar sarcoma of the right middle turbinal removed with snare and curette, showed no recurrence for two years. CLARK reports two cases: 1. A man, æt. thirty-five, with bluish masses in the left nostril, which when removed recurred twice upon the septum near posterior border and necessitated the removal of the entire septum with an osteoid sarcoma upon it. After implication of the left orbit with destruction of the sight, and the development of cauliflower masses in the scar, death occurred. 2. A woman, æt. forty-two, showed a myxo-sarcoma attached to cartilaginous septum in the left nostril, nearly opposite the lower border of the middle turbinate. Most of the cartilaginous and part of the osseous septum were removed. No recurrence had taken place since June, 1897. In conclusion, Clark strongly advocated radical operation.

M. TOEPLITZ.

c.—TUMORS

76. MCKINNEY, RICHMOND. Papilloma of the nasal cavity. *N. Y. Med. Journ.*, March 4, 1899.

77. THORNER, MAX. A naso-pharyngeal polypus of enormous size. *Med. News*, Jan. 20, 1899.

78. THORNER. A case of adeno-carcinoma of the nose. *Arch. f. Laryng.*, viii.

79. DELIE, A. The operative treatment of fibrous polypi in the naso-pharynx. *Ann. des mal. de l'or., du lar.*, xxv., 3.

76. MCKINNEY reviews the literature on nasal fibroma, which invariably grows from the lower turbinal or septum. He reports a case of growth observed in a student, aged twenty-four, on the upper and anterior portion of the cartilaginous septum behind the tubercle, about the size of a coffee bean, raspberry-like, which, after removal with the snare and cautery, did not recur, and proved microscopically to be a fibroma papillare, or true papilloma.

M. TOEPLITZ.

77. The tumor removed from the naso-pharynx, a mucous polypus measured in its largest diameter $2\frac{3}{4}$ inches, in its greatest thickness $1\frac{3}{8}$ inches, and weighed one ounce and five drachms. It had been attached by a slender pedicle to the right lateral wall of the pharynx, just in front of the Eustachian orifice. The right nasal fossa was free after operation. M. TOEPLITZ.

78. Typical case of glandular carcinoma of the septum in a man aged forty-seven. ZARNIKO.

79. A fibroid tumor in a young person, attached to the right side of the pharyngeal roof without any processes extending into the surrounding cavities, was removed with the probe-pointed knife without unusual hemorrhage. ZIMMERMANN.

f.—ACCESSORY CAVITIES.

80. GROSSMANN. Contribution to the pathological histology of the antrum of Highmore. *Arch. f. Laryngol.*, viii.

81. KÖRNER, H. The accidental opening of the maxillary antrum after the extraction of a tooth. *Wien. med. Blätter*, Nos. 4 and 5, 1899.

82. RÖPKE. Radical operations in chronic catarrhs and suppurations of the upper nasal accessory cavities. *Arch. f. Laryngol.*, viii.

83. GERBER. Empyema of the frontal sinus with disappearance of the entire anterior wall. *Arch. f. Laryngol.*, viii, 1.

84. GIBSON, C. L. Empyema of the frontal sinuses and intracranial infection. *Four. Amer. Med. Sciences*, March, 1899.

85. SPICER, SCANES. Specimens of dead bone, polypi, and débris removed from a case of chronic empyema of antrum cured by radical operation in eight weeks. *Proceedings of the Laryngological Society*, London, Jan., 1899.

86. SPICER, SCANES. Case of cure of chronic empyema of maxillary antrum by radical operation. *Proceedings of the Laryngological Society*, London, Jan., 1899.

80. The author found in some polypoid hypertrophies from a maxillary antrum filled with pus, many so-called hyaline bodies in the subepithelial layer. He agrees with the views of Seifert and Polyak that they are derivatives of the round cells in the inflammatory infiltrate. ZARNIKO.

81. KÖRNER has observed five cases where, after extraction of

teeth or roots, the antrum was opened. In four of these cases no reaction occurred, except in one some secretion appeared for four weeks, and in another a somewhat more profuse though transient discharge. The author does not believe it possible to avoid the accidental opening of the antrum. If the opening is suspected it is well to examine with a fine sterile probe, and pack with gauze.

POLLAK.

82. RÖPKE thinks in the chronic diseases of the frontal cavities the anterior ethmoid cells are also affected. With the idea of exposing these latter cells, he first operates according to Kuhnt's method. After removing all disease he makes a broad opening into the ethmoid cells, cures these as far as it is necessary, and makes a broad communication between the nose and the frontal cavity. He finally introduces a strip of gauze, and unites the wound except at one point. In bilateral affections the operation is carried on at the same sitting. After removal of the frontal septum and cutting off of the prominent nasal process of the frontal bone, excellent cosmetic results have followed. The after treatment is simple. The gauze strip may be left off after three to five days. All secretion has stopped on the eighth or tenth day at the latest. In one case out of twelve, slight secretion kept up for two months. Transient diplopia was noted in three patients.

ZARNIKO.

83. GERBER's patient had suffered from ozæna since youth, acquired syphilis (three abortions at the third and fourth month), and later had a tertiary syphilide of the nose (defect in vomer). A specific periostitis and necrosis of the anterior wall of the frontal sinus followed, with secondary empyema of the frontal sinus (long-standing headache and tenderness, etc.). The anterior bony wall was completely eroded, and after a trauma pus broke through.

ZARNIKO.

84. A discharging fistula remaining after trepanation of the left frontal sinus at the inner angle of the left orbit, persistent headache, more marked of late on the right side, necessitated an operation. Through a horizontal incision along the left eyebrow the left sinus was freely scraped except its posterior softened wall, the spoon passing through the soft septum into the right sinus which was filled with pus. A drainage-tube was introduced into the cavity from the nose upward. Two days after the operation meningitis developed. Death ensued nine days after the operation. The autopsy revealed congestion of the pia mater, pus in

the pia at the base of the brain, especially over the pons and cerebellum. Cerebral wall of the right frontal sinus presented a circular opening, one inch in diameter, with smooth edges, the dura above and posteriorly thickened and covered with granulations and blood. The right cribriform plate was carious. An angular piece of bone, $\frac{3}{4}$ inch above the left sinus pressed against the crista galli. Irrigations infected the brain cavity through the structural defect in the right sinus.

M. TOEPLITZ.

85. The title sufficiently indicates the chief points of the case.

ARTHUR CHEATLE.

86. A man, aged twenty-three, had been troubled with fœtor and suppuration from the left nostril for eight years, the origin being the first molar tooth. At the operation, a large gap was found in the anterior bony wall of the antrum, and in the membranous structure filling this gap were small loose, thin, bare scales of bone. The probe and finger passed easily into the cavity, which was filled with thick inspissated pus, cheesy débris, polypi, and granulation tissue. The finger passed into the cavity with the slightest pressure met the finger passed into the nostril, breaking through the membranous portion of the absorbed inner antral wall into the inferior meatus. A drainage-tube was passed into the nose and cut off near the nostril and the muco-antral opening sutured. The tube was removed on the fifth day. All fœtor and pus ceased at the end of three weeks.

ARTHUR CHEATLE.

g.—OTHER NASAL AFFECTIONS.

87. GOODALE, J. L. The histopathology of hypertrophic rhinitis in children. *Four. Amer. Med. Assoc.*, March 11, 1899.

88. CORNICK, BOYD. Epistaxis. *Ibid.*, March 25, 1899.

89. VANSANT, E. LARUE. The suprarenal gland of the sheep in nasal surgery. *Phila. Med. Jour.*, Feb. 25, 1899.

90. BERENS, T. PASSMORE. The rebuilding of a nose without the use of an artificial bridge. *The Laryngoscope*, March, 1899.

91. STOKES, SIR WILLIAM. A clinical lecture on the rhinoplastic operation. *Brit. Med. Jour.*, Feb. 11, 1899.

92. CAIRD, F. M. and GUY, WM. A case of syphilitic destruction of the nose and palate in a young man. Appearance greatly improved by artificial means. *Ibid.*, Jan. 28, 1899.

93. KAYSER. Congenital closure of the posterior choanæ (choanal atresia). *Wiener klin. Wochenschr.*, No. 11, 1899.

94. RAPAUER. On the treatment of coryza. *Klin. therap. Wochenschr.*, No. 1, 1899.

87. GOODALE presents the histologic descriptions of three cases of hypertrophic rhinitis in children between the ages of eight and ten years. The sections of the removed hypertrophy of the first case show a furrowing of the mucous membrane, which varies in thickness from three to four cell layers at the apex to fifteen to twenty at the bottom of the furrows. Epithelium at the apex has no cilia. In the intercellular spaces were a few polymorpho-nuclear neutrophiles. The loose connective tissue below the mucous membrane was three to four times increased, an irregular, delicate fibrous network containing clusters of glands, a few blood-vessels, sinuses, and free cells, the latter submucously, the glands more deeply situated. Anteriorly the reticulum was loosest, posteriorly more compact, and the vessels, glands, sinuses more numerous. The free cells are found near the blood-vessels, glands, and over the connective tissue, and represent leucocytes and plasma cells, also a few eosinophilic polynuclear leucocytes and quite a number of Mastcells. The histologic description of the other two cases differs somewhat, but not essentially, from the foregoing.

M. TOEPLITZ.

88. CORNICK uses a dry plug of prepared sponge, of the size of the little finger of a twelve-year-old boy, soaked in boiled water, squeezed dry, and inserted along the nasal floor.

M. TOEPLITZ.

89. VANSANT uses a freshly made watery solution of the capsule, or ten drops of the glycerin extract of the fresh gland, in a drachm of boric-camphor solution, to be applied after a five per cent. solution of cocain or a four per cent. of eucain, in order to produce intense ischæmia of the parts as great aid in nasal operations.

M. TOEPLITZ.

90. The very ugly deformity consisted in a flattened and broad bridge, the line of the septum forming an irregular obtuse angle with the apex pointing to the right. The columna was turned to the right side and occluded the right naris. The body of the septum was deflected to the left and its upper half adherent to the wall of the vestibule. Under anæsthesia the soft parts were divided from the septum, then both nasal bones separately broken with an Adams forceps from their attachment with the superior

maxilla and frontal spine and, in addition, crushed by a bar of steel heavily struck with a mallet. The perpendicular plate of the ethmoid and the rest of the septum were also broken with the Adams forceps. Cork splints inside and a plaster cast outside held the fragments in place. Complete recovery with good cosmetic result took place without reaction after operation.

M. TOEPLITZ.

91. In his lecture delivered in the Meath Hospital, Dublin, Sir WM. STOKES related two cases recently operated on him for re-formation of the nose. The first was a woman, aged twenty-seven, who had lost her nose from, most probably, syphilis. The procedure adopted was in most respects similar to one described in Treves's *Operative Surgery*. In order to assist in preventing flattening of the new nose two small leaden plates were placed, one on each side, and approximated by passing silk sutures horizontally through the tissues. These plates and sutures were left in situ for three days; the result was satisfactory. The second was a boy, aged nineteen, who had suffered with lupoid ulceration. The following novel method was adopted: The columella not being affected, an incision was begun a little to the inside of the right ala and carried across the extremity of the nose to a corresponding point on the left side, the incision extending as high up as the point corresponding to the lower margins of the nasal bones, and passing through all the tissues into the anterior nares. The bridge of tissue so detached was then drawn down and kept in that position by a small ivory buttress, which separated it from the tissues of the upper part of the nose. The gap thus formed was somewhat lozenge-shaped, and to fill it two triangular-shaped flaps were dissected up, one on each side, from the cheeks, with the bases above and the apices below, and turned downwards and inwards, their bases meeting in the middle line, where they were carefully sutured. The upper margins of the transplanted flaps were also carefully sutured to the tissues above, and the lower margins to the detached bridge below. The ivory buttress was left in for three days. In order to obliterate the defects caused by the detachment and transplantation of the flaps a sliding plastic operation was performed. The result was most satisfactory.

ARTHUR CHEATLE.

92. At a meeting of the Edinburgh Medico-Chirurgical Society held on January 18, 1899, CAIRD and GUY showed a young man in whom syphilitic destruction had overtaken the soft parts of the

nose, upper lip, cheeks, and palate ; while the vomer, inferior turbinated bones, nasal bones, and nasal processes of the maxillæ were completely destroyed. Extensive destruction of the palatal and alveolar processes of the maxillæ had also taken place, and all the upper teeth were lost, the lower lip and teeth projecting far beyond the remains of the upper lip. The appearance of the patient was "horrifying." A nose, with cheeks and upper lip were fitted and retained in place by means of a spectacle frame. The apparatus being made of white vulcanite, was painted in oils, had a mustache attached, and the bridge of the spectacles vulcanized in. An artificial palate, into the middle line of which a strip of springy gold was vulcanized, was then made ; the gold strip being bent in such a way that its extremity, sliding in a gold box or catch at the back of the upper-lip part of the nose-piece, retained the palate in place. At a distance of a yard or two one failed to detect the artificial nature of his facial condition.

ARTHUR CHEATLE.

93. KAYSER observed a case of one-sided choanal atresia in a man twenty-four years old. The palatal arch was rather high and asymmetrical ; the raphe turns to the right. Posterior rhinoscopy revealed the left choana to be free, the right completely occluded by a partition covered with pale red mucous membrane several millimetres distant from the edge of the choana. No subjective symptoms ; loss of smell on that side. Operation was not allowed.

POLLAK.

94. RAPAUER recommends in acute coryza irrigating the nose with a strong permanganate of potash solution. The mucous membrane is then to be cleansed mechanically with some cotton dipped in this solution with the finger !

POLLAK.

SOFT PALATE, PHARYNX, AND BUCCAL CAVITY.

95. SWEENEY, GILLIFORD B. The faucial tonsil, its sphere as an agent of systemic infection. *Four. Amer. Med. Ass.*, March 25, 1899.

96. SMITH, EDGAR D. Tuberculous ulceration of the soft palate and adjoining soft tissues. *N. Y. Med. Jour.*, Feb. 11, 1899.

97. GRIFFIN, E. HARRISON. Polypus of the uvula. *N. Y. Med. Jour.*, Jan. 28, 1899.

98. ABRAHAM, BERTRAM. Rheumatic tonsillitis. *British Med. Jour.*, Feb. 4, 1899.

99. TILLEY, HERBERT. Epitheliomatous ulceration of nasopharynx. *Proc. Laryngol. Society*, London, Feb., 1899.

100. BANKS. Faucial tumors. *British Med. Jour.*, Feb. 4, 1899.

101. ROBERTSON, W. G. AITCHISON. On tonsillar calculi. *British Med. Jour.*, Jan. 7, 1899.

102. FEIN. The etiology of cleft-palate and posterior palatal fissures. *Wien. klin. Wochenschr.*, No. 4, 1899.

103. TANDLER. On the embryology of uranoschisma. *Wien. klin. Wochenschr.*, No. 7, 1899.

104. FINDER. Pathology of the tonsil. *Arch. f. Laryng.*, viii.

105. MACHOL. A case of septicæmia starting from the pharyngeal tonsil. *Deutsche med. Wochenschr.*, No. 10, 1899.

106. CAZ. Glosso-epiglottic phlegmon. *Arch. f. Laryng.*, viii.

95. SWEENEY contends that the faucial tonsil while in a state of inflammation, is a frequent and common source of morbid processes which ultimately affect the entire human economy. It is thus the starting-point for diphtheria, scarlatina, follicular tonsillitis, acute rheumatism, tuberculosis, typhoid and malarial fevers.

M. TOEPLITZ.

96. The rapidly progressing ulcerations are in the majority of cases secondary to tuberculous infiltration of the lungs, and the palate and its neighboring tissues are infected by the tuberculous excretions. They are preceded by separate miliary tubercles (often mistaken for small vesicles), which break down, form small ulcers, and coalesce on the second or third day, very rapidly now forming a large ulcer. A few are primary from tuberculous dust settling upon an abraded mucous membrane. The patient rapidly loses strength and dies from exhaustion. The ulcers are satisfactorily treated with a mixture of equal parts of lactic acid and glycerin. SMITH reports five observations of his own.

M. TOEPLITZ.

97. GRIFFIN accidentally observed in a man aged forty, at the end of the slightly enlarged uvula, a polypus an inch in length and half an inch in diameter, which had never caused any disturbance. Tickling and hawking, usually ascribed to an elongated uvula, can be easily explained by accompanying obstructive nasal catarrh and the removal of the uvula is mostly unnecessary.

M. TOEPLITZ.

98. At a meeting of the Clinical Society of London, held on January 27, 1899, ABRAHAMS drew the following conclusions from his observations :

1. The more common varieties of rheumatic sore throat fall into two main categories, faucial erythema and tonsillitis proper.

2. Faucial erythema is most common in adults, rheumatic tonsillitis in children, in whom it usually assumes the follicular type, quinsy being more frequent in older subjects.

3. Faucial erythema is an initial manifestation of acute rheumatism, tonsillitis may be the actual primary lesion.

4. Many cases are now definitely on record in which endocarditis has followed a non-scarlatinal tonsillitis unaccompanied by joint lesions. In numerous other instances the tonsillitis has immediately preceded an attack of arthritis or of chorea.

5. The presence of the same micro-organisms in the tonsils, joints, blood, and urine is evidence in favor of the participation of pyogenic cocci in the etiology of rheumatism.

ARTHUR CHEATLE.

99. A man aged fifty-five complained of difficulty of breathing through the nose, unpleasant discharge into the mouth, and general weakness. The palate was immobile, almost vertical in direction ; its free borders were so thickened and congested that only a small aperture just sufficient to admit the index finger was present. On introducing the finger, ulceration could be felt. An enlarged gland was present under the upper part of the left sterno-mastoid.

ARTHUR CHEATLE.

100. At a meeting of the Liverpool Medical Institution, held on January 26, 1899, BANKS described three cases of removal of tumors lying external to and behind the tonsil.

1. A young man in whom a tumor had been growing for many years, causing a marked projection behind the vertical ramus of the jaw. Removed by the mouth, through a vertical incision. Shelling out easily. An adeno-fibroma.

2. Similar case in a woman aged forty ; history of two years' growth. A preliminary laryngotomy was done. The tumor shelled out easily.

3. A woman twenty years of age. A swelling had appeared behind the right tonsil eight or ten weeks before admission, and had been steadily, and rather rapidly increasing, great deal of pain, and difficulty in swallowing. Preliminary laryngotomy. Free incision over tumor, which was found to be adherent to bone at

its farthest off point, necessitating slitting up of the cheek and division of the lower jaw. When the growth was torn away it was found to be adherent to the side of the body of the third cervical vertebra and to the base of the skull. Sarcoma.

ARTHUR CHEATLE.

101. ROBERTSON's patient was a man aged fifty, who six years previously began to suffer from repeated attacks of tonsillitis. Three years previously the submaxillary glands on the right side suppurated. For the last two years his health had been good. At the end of June, 1898, he experienced a fulness in his throat, and inability to drink fluids as rapidly as before. In the night of July 3d, he was awakened by a feeling of suffocation, and coughed up a calculus from the right tonsil somewhat oval in shape, broader at one end than the other, the greatest length being $1\frac{3}{4}$ inch, and greatest breadth $1\frac{1}{4}$ inch. Weight 26.8 grammes. The layers of which the stone was composed were arranged concentrically.

Chemical composition :

Organic matter.....	18.40 per cent.
Inorganic matter.....	81.60 "
Phosphoric anhydride.....	50.00 "
Calcium and magnesium oxides....	28.20 "

This is the largest tonsillar calculus found among fourteen recorded cases. The whole subject is dealt with in the paper.

ARTHUR CHEATLE.

102. Fissures in the body of the foetus may arise from the interposition of any body. The origin of the development of the pharyngeal tonsil can be traced to foetal life, and as enlarged pharyngeal tonsils and posterior palatal fissures are usually associated, an explanation for the origin of the latter is furnished.

POLLAK.

103. Opposed to this, TANDLER thinks that the pharyngeal tonsil has nothing to do with the etiology of the total or partial palatal defect. On the other hand, the tongue can play an important part. He examined some cases associated with mikrog-nathia and explains uranoschisma as follows: the tongue cannot withdraw at the proper time from the upper part of the common nasal-buccal cavity, but remains in place against the septum, and so prevents the union of the two sides of the palate.

POLLAK.

104. Histological examination of: (1) retention cyst, the so-called follicular abscess or cheesy foci; (2) a large benign tumor,

pendulous fibro-adenoma; (3) a tonsil with broad condylomata.

ZARNIKO.

105. A man with chronic bronchitis and emphysema was taken ill with dysphagia and malaise. The right tonsil was swollen but without a membrane. Two days later, with a severe chill erysipelas of the nose set in, but abated after a few days. A painful swelling appeared below the right ear, and after eight days softened; was incised, pus evacuated. The left wrist then became painful, and patient had another severe chill. Hearing became very much affected with inflammatory signs, and two weeks later patient died after another severe chill. No bacteriologic examination or autopsy. The author believes that the diagnosis is correct; septicæmia without recognizable external trauma.

NOLTENIUS.

106. CAZ reports two cases where severe dysphagia set in with fever and malaise caused by circumscribed inflammations of the submucous tissue in an epiglottic fossa. In the first case pressure on the epiglottis caused dyspnœa and necessitated tracheotomy. In the second, the symptoms abated under antiphlogistic treatment.

ZARNIKO.

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